

U.S. Department of Homeland Security

United States Coast Guard



U.S. Coast Guard

Removal Action Completion Report

USCG Atwater Facility Detroit, Michigan

Task Order Number: HSCG83-09-J-3CL358 Contract Number: HSCG83-08-D-3CL109

May 2014



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5 77 WEST JACKSON BOULEVARD CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF: SR-6J

July 2, 2014

Gregory O. Carpenter
Chief, Environmental Compliance
United States Coast Guard
Civil Engineering Unit
1240 East Ninth Street, Room 2179
Cleveland, OH 44199-2060

Re: Remedial Action Completion Report
U.S. Coast Guard Atwater Facility
Detroit, Michigan
Tetra Tech, Inc., May 2014
Transmitted by your May 22, 2014 letter.

Dear Mr. Carpenter:

U.S. EPA has completed its review of the Remedial Action Completion Report (RACR). Soil contamination was previously addressed. Quarterly groundwater monitoring has now demonstrated that unrestricted residential groundwater cleanup goals have been achieved. Therefore, EPA concurs with the Coast Guard that no further action is necessary under CERCLA at the site.

If you have any questions I can be reached at 312 886-4843.

Sincerely,

W. Owen Thompson

Remedial Project Manager

Superfund Remedial Response Section Seven

cc: Jaime Brown, Acting Chief, RRS#7

Brian Barwick, ORC James A. Cook, USCG

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Previously, U.S. EPA concurred with the Coast Guard's conclusion that no further action is necessary under CERCLA, under the exposure scenario presented by the City of Detroit's current site reuse plan to extend River Walk through the site (Section 1.1). Our concurrence was conditioned on imposition of real property land use restrictions. Under that scenario, groundwater exposure would not a concern so long as municipal water use is controlled by the City of Detroit. The ability of the City to enforce those restrictions in the future due to its recent financial condition has been a concern.

In April, 2013, the Coast Guard removed additional soil from the Atwater site, replaced two monitoring wells and began quarterly groundwater monitoring, in order to demonstrate that unrestricted residential groundwater cleanup goals have been achieved. The results of the first

round of quarterly sampling are presented in the *Groundwater Monitoring Report*. The report concludes that federal Maximum Contaminant Levels (MCLs) have been achieved for PAHs and metals at the site.

EPA concurs with the Coast Guard that use restrictions on groundwater would no longer be necessary under CERCLA if the next three rounds of groundwater sampling continue to show concentrations below MCLs.

It appears from referenced correspondence¹ that the cleanup may also achieve compliance with due care requirements of the State of Michigan Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA, as amended and the Part 201 Administrative Rules. Only the Michigan Department of Environmental Quality can make this determination.

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CC:

Stephen Ostrodka, Chief, RRS#7

Brian Barwick, ORC James A. Cook, USCG

¹ November 29, 2009 Letter from Paul Owens, Environmental Manager, MDNRE EMD, Southwest District Office, to Will Tamminga, Director of Project Management, Detroit Economic Growth Corporation, regarding environmental issues for land exchange between the City of Detroit and U.S. Coast Guard for the Mt. Elliot Property.

U.S. Department of Homeland Security

United States Coast Guard



Commanding Officer United States Coast Guard Civil Engineering Unit Cleveland 1240 East Ninth Street Room 2179 Cleveland Ohio 44199-2060 Phone: (216) 902-6255 Fax: (216) 902-6277 Email: <u>James.A.Cook@uscg.mil</u>

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MAY 22 2014

United States Environmental Protection Agency Region 5 Superfund Div, SR-6J Remedial Response Section 6 Mr. Owen Thompson 77 West Jackson Boulevard Chicago, IL 60604-3590

Dear Mr. Thompson:

Please find one disk and one copy of the Final Removal Action Completion Report for the USCG Atwater facility in Detroit, Michigan for your records.

In your August 29, 2013 letter, the USEPA provided a contingent approval of the USCG opinion that the site has an unrestricted use under CERCLA, the contingency being that groundwater would need to be monitored for site related constituents for four quarters. The USCG requests a final determination that the site is available for unrestricted use under CERCLA based on the groundwater results included in the attached

If you have any questions or would like to discuss these documents in detail, please contact Mr. James Cook at (216) 902-6255.

Sincerely,

Gregory O. Carpenter

Chief, Environmental Compliance By direction of the Commanding Officer

Enclosures

(2) Final Removal Action Completion Report (hard copy and CD): USCG Atwater facility, Detroit, Michigan, May 2014.



PITT 05-14-002

May 16, 2014

Project Number 112G02435

Commanding Officer U.S. Coast Guard Civil Engineering Unit Attn: Mr. James Cook 1240 E. Ninth St., Rm. 2179 Cleveland, OH 44199-2060

Reference:

a. Contract HSCG83-08-D-3CL109; Miscellaneous A/E Environmental Services

c. Task Order HSCG83-09-J-3CL358; CERCLA Investigation at USCG Atwater Facility

Detroit, MI (21-09-8393CL358)

Subject: .

Final Removal Action Completion Report (RACR)

Dear Mr. Cook:

Attached please find five (5) copies of the subject report for the above-listed investigation that has been prepared in accordance with the CERCLA templates for your use and distribution. A CD for each report in pdf format has also been provided.

Should you have any questions regarding the enclosed information, please contact the Project Manager, Joseph Logan at 412-921-7231 or me at (412) 921-8415.

Very truly yours,

Roger A. Clark, Ph.D.

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Program Manager

RAC/clm

Enclosure

CC:

Joseph Logan - Tetra Tech Pittsburgh (1 copy)

file 112G02435

Vanessa Good – Tetra Tech Pittsburgh (1 copy)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



REGION 5 77 WEST JACKSON BOULEVARD CHICAGO, ILLINOIS 60604

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Remedial Project Manager

Superfund Remedial Response Section Seven

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cc: Stephen Ostrodka, Chief, RRS#7

Brian Barwick, ORC James A. Cook, USCG

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United States Environmental Protection Agency Region 5 Superfund Div, SR-6J Remedial Response Section 6 Mr. Owen Thompson 77 West Jackson Boulevard Chicago, IL 60604-3590

Dear Mr. Thompson:

Please find two copies of the Draft Final Removal Action Completion Report for the USCG Atwater facility in Detroit MI and a CD with two reports for the Ashtabula site for your review and comment. I have also enclosed a CD for the Final Removal Action Completion Report for USCG Thunder Bay Island Light Station, Alpena County, MI for your files..

If you have any questions or would like to discuss these documents in detail, please contact Mr. James Cook at (216) 902-6255.

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Gregory O. Carpenter

Chief, Environmental Compliance By direction of the Commanding Officer

Enclosures

(1) Draft Final Removal Action Completion Report (2 hard copies and 2 CDs): USCG facility, Detroit, MI, May 2013.

(2) Final Removal Action Completion Report, USCG Thunder Bay Island Light Station, Alpena County, MI, May 2013.

(3) Final Tier Evaluation Report, March 2006 and Final Closure Report-Impacted Soil North of the Boat House – November 2005 (1 CD)

Toxicologist Support Request Form

Date submitted July 1, 2013
NameW. Owen Thompson
Phone #6-4843
Site NameU.S. Coast Guard Detroit Atwater Site
Superfund Site-Specific Charge Account Number_B5NC
Was there prior review on this site by a toxicologist? Yes _X_No
If so, who Keith Fusinski
Description/Scope of service requested: The Detroit Atwater site has had a Site Investigation and Cleanup. We are in the process of closing out the site with the Coast Guard, and we need to continue our consultation with Dr. Fusinski in regard to risk assessment issues and institutional controls.
Requested toxicologistK. Fusinski
Requested due dateTBD
Do you want a typed written response? Yes_X_No
Do you anticipate the need for the toxicologist to attend a meeting(s) regarding these support services? Yes No_X
If so, what type of meeting and when?
Assigned to On (date)
Supervisor
Due Date Assignment Completed

U.S. Department of Homeland Security

United States Coast Guard



Scott Vasko Tetra Tech, Inc. Geotechnical Engineer

Joseph W. Logan, Jr Tetra Tech, Inc. Project Coordinator

Bøger A. Clark, Ph.D. Tetra Tech, Inc. Program Manager Removal Action Completion Report

USCG Atwater Facility **Detroit, Michigan**

Prepared for:

U.S. Coast Guard Civil Engineering Unit Cleveland, Ohio

Prepared by: Tetra Tech, Inc.

Consultant project number: 112G02435

Date: May 2014

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USCG Atwater Facility Detroit, Michigan

Executive Summary

As provided in Executive Order 12580 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the U.S. Coast Guard (USCG) is acting as the lead agency in implementing a Non-Time-Critical Removal Action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at the USCG Atwater Facility (Site) located in Detroit, Michigan (see Figures 1 and 2). The removal action was conducted, and this Removal Action Completion Report was prepared utilizing other supporting documents, including the Engineering Evaluation/Cost Analysis (EE/CA) (Tetra Tech, 2013a), the project-specific Quality Assurance Project Plan (QAPP) (Tetra Tech, 2010), the QAPP Addendum (Tetra Tech, 2011b), the Field Sampling Plan (FSP) (Tetra Tech, 2011a), and the Removal Action Work Plan (RAWP) (Tetra Tech, 2013b).

The removal action was conducted in accordance with the United States Environmental Protection Agency's (USEPA's) Guidance for Conducting Non-Time-Critical Removal Actions Under CERCLA (USEPA, December 1993) and Section 300.415 of the NCP to address soil and groundwater impacted by arsenic, lead, and polynuclear aromatic hydrocarbons (PAHs) at concentrations above site-specific removal action objectives (RAOs). The primary objective of the removal action was to protect public health and welfare and the environment, thereby facilitating the transfer of the Site from the federal inventory to be conveyed to the City of Detroit as part of the River Walk Redevelopment project. The RAOs for soil were identified by the USCG as the Michigan Department of Environmental Quality (MDEQ) risk-based screening levels (RBSLs) for residential exposure. Therefore, the applicable criteria were identified as the site-specific RAOs. Removal and off-site disposal of arsenic-, lead-, and PAH-impacted soil with concentrations greater than the RAOs were consistent with the requirements of Section 300.415 of the NCP and State requirements and eliminates unacceptable risks to human health, welfare, and the environment for current and anticipated future land uses. The shallow groundwater at the Site is an unlikely source of drinking water; therefore, active remediation of the groundwater was not recommended.

Between 2001 and 2012, site assessments and investigations were conducted at the Site. The results of the Phase I and Phase II Environmental Site Assessment soil sampling indicated that individual samples of benzo(a)pyrene, arsenic, lead, and selenium concentrations exceeded the MDEQ residential criteria. However, the average benzo(a)pyrene concentration was less than the MDEQ residential criteria, the concentration of arsenic was within the concentration range for soil in the United States

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USCG Atwater Facility Detroit, Michigan

(as published by the USEPA), and the concentrations of lead and selenium were only slightly greater than the United States soil concentration range (TtNUS, 2002). The results of the soil sampling in another Phase II Environmental Site Assessment investigation indicated elevated PAHs and metals greater than MDEQ Groundwater Surface Water Interface and/or residential direct contact criteria (Enviro Matrix, 2006). The results of the Site Investigation indicated that soil remediation would be required to meet residential use criteria; however, groundwater remediation would not be required (Tetra Tech, 2012).

An EE/CA was prepared and submitted for MDEQ and public comment between February 11, 2013 and March 13, 2013. Plans [QAPP, QAPP Addendum, FSP, RAWP, Health and Safety Plan (HASP)] were prepared and approved prior to implementing the soil removal activities.

The soil removal activities at the USCG Atwater Facility occurred from April 8 through April 23, 2013. Soils were removed to depths of approximately 2.5 or 5 feet below ground surface (bgs). After the soil was excavated to the predetermined horizontal and vertical boundaries, field screening of soil was performed utilizing a hand-held, portable X-ray fluorescence (XRF) analyzer for arsenic and lead, and confirmation soil samples were collected from the excavations for laboratory analysis for PAHs, arsenic, and lead. Field screening results ranged from below 3 parts per million (ppm) to 135 ppm for arsenic and from 4 ppm to 1,172 ppm for lead. Three additional areas were excavated based on the laboratory test results greater than RAOs.

Approximately 2,440 tons or 1,480 cubic yards of non-hazardous impacted soil were excavated and transported to Veolia's Arbor Hills Landfill in Northville, Michigan for disposal. The excavations were backfilled with fine sand, covered with a layer of topsoil, and seeded with grass seed. Based on the laboratory analytical results of the samples collected from the excavation bottoms and sidewalls, there were several locations where confirmation sampling results were greater than RAOs. Four were sidewall locations along the property boundary, and these results are not representative of the soil on the site because the soil on one side of the samples is off-site and soil on the other side has been replaced with clean fill. Two other sidewall locations were adjacent to the slip and additional excavation was not attempted due to concerns about damaging the pier structure. Similar to the property boundary samples, these locations are not representative of the remaining soil. Four excavation bottom samples were left in place that had concentrations greater than the RAOs, but exposure to soil with elevated contaminant concentrations is limited because of the 2.5 feet of clean fill over these locations.

USCG Atwater Facility Detroit, Michigan

Because the contaminant concentrations were greater than the RAOs in some confirmation samples, a statistical analysis was performed on the data to determine the site exposure point concentrations (EPCs) for arsenic, lead, and benzo(a)pyrene equivalents (BaPEqs). The results of this analysis showed that EPCs are less than the RAOs, so the site meets the residential exposure limit requirements.

Four rounds of quarterly groundwater samples were collected after the excavation in 2013 and 2014. Samples were analyzed for PAHs and metals. All results were less than USEPA Maximum Contaminant Levels (MCLs) or MDEQ Residential Risk-Based Screening Levels (RBSLs) if no MCLs were available.

USCG Atwater Facility Detroit, Michigan

1. Introduction

This Removal Action Completion Report (RACR) was prepared by Tetra Tech on behalf of the United States Coast Guard (USCG) for the USCG Atwater Facility (Site) located in Detroit, Michigan.

The federal government currently owns the Site, which covers approximately 1.26 acres of harbor front land in downtown Detroit along the Detroit River, although only approximately 0.5 acre is land (see Figure 1 and Figure 2). No buildings currently exist on the site. The site was predominantly covered with asphalt and concrete with a small grassy area prior to the removal action. A fence with a locked gate is located along Atwater Street and a fence is located on the eastern and western sides of the property to restrict access to the site. The general site location is depicted in Figure 1 (Site Location Map). A site map of the Detroit Atwater Property is provided as Figure 2.

The removal action completed for the USCG Atwater Facility included the excavation and removal of arsenic-, lead-, and PAH-impacted surface soils associated with the former USCG Marine Safety Office (MSO) at the Site. The removal action was conducted in accordance with the United States Environmental Protection Agency's (USEPA's) Guidance for Conducting Non-Time-Critical Removal Actions Under CERCLA (Comprehensive Environmental Response, Compensation and Liability Act; USEPA, December 1993). The primary objective of the removal action was to protect public health and welfare and the environment, thereby facilitating the transfer of the Site from the federal inventory to be conveyed to the City of Detroit as part of the River Walk Redevelopment project. The remedial action objectives (RAOs) for soil were identified by the USCG as the Michigan Department of Environmental Quality (MDEQ) risk-based screening levels (RBSLs) for residential exposure. Therefore, the applicable criteria were identified as the site-specific RAOs. Removal and off-site disposal of arsenic-, lead-, and PAH-impacted soil with concentrations greater than the RAOs was consistent with the requirements of Section 300.415 of the NCP and State requirements and eliminates unacceptable risks to human health, welfare, and the environment for current and anticipated future land uses. The shallow groundwater at the Site is an unlikely source of drinking water; therefore, active remediation was not recommended for the groundwater.

USCG Atwater Facility Detroit, Michigan

1.1 Background

The USCG Atwater facility was the location of a former USCG Marine Safety Office (MSO) that consisted of two separate buildings: a maintenance building and a six-car garage. Located in the northwestern corner of the property, the maintenance building, constructed in 1932, was a two-story wood and brick structure. The six-car garage, located in the northeastern corner of the property and constructed in the 1930s, was a single-story wood and brick structure. The former maintenance building and garage were both demolished around 2004. Along the southern and western side of the property are boat slips, both of which remain. A boat house once enclosed the eastern slip. The general site location is depicted in Figure 1 (Site Location Map). A site map of the Detroit Atwater Property is provided as Figure 2.

The current surrounding areas of the Site are primarily commercial/industrial. The River Walk zoning overlay allows for certain residential, commercial, and recreational uses, while phasing out most industrial uses. Property located immediately to the east consists of a surface parking lot, to the west is a former cement facility (now open land), to the south is the Detroit River, and to the north is Atwater Street. The City of Detroit River Walk promenade will extend through the properties both to the east and to the west of the Site. The Site is relatively flat and slopes gently toward the Detroit River.

Federal and state government records were searched as a part of the Phase I ESA to determine if the Site had historical or cultural significance and to determine if there are any sensitive environmental areas of significance associated with the Site, and none were found, therefore no cultural resource survey was performed at the Site. Also, no threatened or endangered species assessment has been performed at the Site, although, because of the limited habitat, threatened and endangered species are unlikely to be present.

Listed below are brief summaries of the historical characterizations performed at the Site, including the 2002 Phase I and II Environmental Site Assessment, the 2006 Phase II Environmental Site Assessment, and the 2011 Site Investigation Report. These reports, which provide additional summary and analysis, are included as appendices in the Engineering Evaluation/Cost Analysis (EE/CA) (Tetra Tech, 2013a).

 Phase I and II Environmental Site Assessment for Detroit Atwater, Tetra Tech NUS, December 2002 – The results of the soil sampling in this investigation indicated that individual samples of benzo(a)pyrene, arsenic, lead, and selenium

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exhibited concentrations in excess of the MDEQ residential criteria. However, the average benzo(a)pyrene concentration was less than the MDEQ residential criteria, the concentration of arsenic was within the concentration range for soil in the United States (as published by the USEPA), and the concentrations of lead and selenium were only slightly greater than the United States soil concentration range. Additionally, the land use at the Site is zoned as commercial and industrial. Therefore, it was concluded that there were no areas of significant environmental concern requiring rectification prior to transfer of the property, and there were no further recommendations at that time (TtNUS, 2002).

- Phase II Environmental Site Assessment, Enviro Matrix, July 2006 The results of the soil sampling in this investigation indicated elevated PAHs and metals greater than MDEQ Groundwater Surface Water Interface and/or residential direct contact criteria (Enviro Matrix, 2006).
- Site Investigation Report for Atwater Facility, Tetra Tech, November 2012 –The
 results of the investigation indicated that soil remediation would be required to
 meet residential use criteria; however, groundwater remediation would not be
 required (Tetra Tech, 2012).

The EE/CA also identified applicable or relevant and appropriate requirements (ARARs) and to be considered (TBC) guidance, as required under Section 121 (d) of CERCLA, as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA) and Section 300.400(g) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). A summary of ARARs for the Site is presented in Table 1.

The EE/CA identified removal of the impacted soil as the most effective, implementable, and cost-effective action for the Site. Following this decision, a Removal Action Work Plan (RAWP) was prepared by Tetra Tech (Tetra Tech, 2013b). The RAWP described the removal action activities and standard operating procedures (SOPs) and referenced the Quality Assurance Project Plan (QAPP) developed for the project.

A Field Sampling Plan (FSP) (Tetra Tech, 2011a) was prepared to provide procedures for field sample collection to characterize Site soils, including the nature and extent of lead, arsenic, and PAH impacts in soil. Additionally, the FSP presented procedures for collecting removal confirmation samples to verify the successful removal of the impacted soil.

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1.2 Chronology of Events

The following is a brief chronology of events associated with the Site activities.

- May 2001: Tetra Tech conducted a Phase I Environmental Site Assessment for USCG.
- August 2001: Tetra Tech conducted a Phase II Environmental Site Assessment for USCG.
- April 2006: Enviro Matrix (EM) conducted a Phase I and Phase II ESA of the site for the Economic Development Corporation of the City of Detroit.
- March 2010: Quality Assurance Project Plan finalized.
- April 2011: Field Sampling Plan finalized.
- April 2011: Quality Assurance Project Plan Addendum finalized.
- April 2011 to June 2012: Tetra Tech conducted a Site Investigation for USCG.
- January 2013: Engineering Evaluation/Cost Analysis finalized.
- February 11, 2013 through March 13, 2013: Engineering Evaluation/Cost Analysis and Removal Action Work Plan made available for public review and comment.
- April 2013: Tetra Tech performed soil removal action and removal confirmation sampling at the Site for USCG.
- June 2013, September 2013, December 2013, and March 2014: Tetra Tech collected and analyzed groundwater samples.

1.3 Public Participation and Response to Comments

In accordance with the NCP, a Public Notice (Appendix A) was given by the USCG announcing that the EE/CA and RAWP for the proposed removal action at the USCG Atwater Facility was available for review and comment for a period of 30 days. The purpose of the public participation requirement of the NCP is to promote active

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communication between the communities affected by the release at the Site and the USCG.

The public notice regarding the proposed soil removal action was published in the Detroit Free Press from February 10, 2013 through February 16, 2013. The EE/CA and the RAWP were made available for public viewing. A written notification of the availability of the documents was provided to the City of Detroit, who is interested in acquiring the property. The documents were posted electronically on the USCG District Nine News website (http://www.d9.uscgnews.com/go/doctype/4007/117211). Each of the final documents was also reproduced in full hardcopy and provided to the Main Branch and the Skillman Branch of the Detroit Public Library in Detroit, Michigan for public viewing. A copy of the EE/CA and RAWP were also submitted to the MDEQ and the City of Detroit for comment. The MDEQ and City of Detroit did not provide any comments on the documents.

The USCG received no significant comments from the community during the 30-day public comment period. Therefore, consistent with provisions [40 Code of Federal Regulations (CFR) 300.415] of the NCP, the USCG proceeded with implementing the removal action as planned.

2. Removal Action Activities

The removal action was conducted in accordance with the USEPA's *Guidance for Conducting Non-Time Critical Removal Actions Under CERCLA* (USEPA, December 1993). The primary objective of the removal action was to protect public health and welfare and the environment, thereby facilitating the transfer of the Site to the City of Detroit. As discussed in the EE/CA and RAWP, the USCG selected RAOs for contaminants of concern (COCs) in soil based on MDEQ RBSLs for residential exposure as shown in the following table:

Soil COC	RAO, mg/kg
Arsenic	7.6
Benzo(a)pyrene equivalents (BaPEqs)	2.0
Lead	400

The removal action activities at the Site occurred from April 8 through April 23, 2013.

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2.1 Pre-Removal Action Activities

2.1.1 Site Access

Prior to commencing with the removal action activities, appropriate permits and applications were obtained and prepared. The permits and applications listed below were obtained and prepared, as required (see Appendix B):

- MDEQ Waste and Hazardous Materials Division Generator Site Identification No. MIK112091844.
- Advanced Disposal Arbor Hills Landfill in Northville, Michigan, Non-Hazardous Waste Approval No. MI-687-140328-AH5296-515.
- Usher Oil Company, Detroit, Michigan, Non-Hazardous Waste Approval No. 041713-W.

The USCG Atwater Facility removal action activities were restricted by the adjacent property boundaries, fences along the property boundaries, and the presence of the Detroit River immediately south of the Site.

2.1.2 Site Preparation

Prior to beginning the soil removal activities, the extent of each excavation was surveyed and marked with stakes and paint. Work zones were identified, as well as staging areas for vehicles and equipment. A plan for directly loading and unloading trucks was determined, and traffic patterns were identified.

Surface debris located at the Site was removed and disposed off-site. The surface debris consisted primarily of large rubber tires, scrap metal objects, large concrete pieces, old lumber, and an old parts washer. Concrete debris was disposed of through Recycled Aggregates. Steel debris was disposed of through Winston Brothers of Detroit Michigan. Tires were disposed of at Waddles Tire in Brownstown, MI. Miscellaneous debris was disposed of at Advanced Disposal in Northville, MI.

2.1.2.1 Utility Clearance

In accordance with State law, MISSDIG was contacted on March 27, 2013 for utility clearance, and ticket number B30860211 was issued for the Site. Site plans and

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sketches from previous utility clearances associated with site investigations were reviewed to determine the potential for underground utilities at the Site to be affected by the soil removal.

2.1.2.2 Historic Preservation

Federal and state government records, including those of the National Register of Historic Places and the Michigan State Historic Preservation Office, were searched as a part of the Phase I ESA to determine if the Site had historical or cultural significance. The subject property was not identified as a historical or cultural site (TtNUS, 2002). One such historical/cultural site was identified within one-quarter mile of the Site, and several sites were identified within one-half mile and 1 mile of the Site. Prior to demolishing the former maintenance building and six-car garage, the USCG contacted the State of Michigan Department of History, Arts, and Libraries, whose Environmental Review Coordinator provided a letter on January 23, 2004 stating that "no historic properties are affected within the area of potential effects of this undertaking;" this letter is included as an Appendix in the EE/CA (Tetra Tech, 2013a). The USCG determined that the Site had no culturally significant resources. No other evaluation was performed, and the proposed removal action was not expected to affect significant cultural or historical resources.

2.1.2.3 Endangered Species Assessment

As described in the EE/CA, federal and state government records were searched as a part of the Phase I ESA to determine if there were any sensitive environmental areas of significance associated with the Site, including Federal Lands Data (Federal or state wilderness area, preserves, sanctuaries, or refuges; wild and scenic rivers; fish and wildlife; threatened or endangered species; etc.) (TtNUS, 2002). No sensitive environmental areas were identified within 0.125- or 1-mile of the subject site. Because of the limited habitat, no threatened or endangered species are likely to exist at the site, and the removal action would not adversely affect potential habitat for threatened or endangered species. Therefore, the proposed removal action was not expected to pose a risk to potential habitat for threatened or endangered species.

2.1.2.4 Soil Erosion and Sedimentation Control

The Site is relatively flat and is predominantly covered with asphalt and concrete with a small grassy area. Soil erosion and sedimentation control measures applied at the Site included setting up hay bales along the perimeter of the site in accordance with

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MDEQ Water Bureau Soil Erosion and Sedimentation Control Program, *Soil Erosion and Sedimentation Control Training Manual* (MDEQ, 2005) and Wayne County Department of Public Services, Land Resource Management Division, *Permit Procedures for Soil Erosion and Sedimentation Control* (Wayne County, 2010).

2.1.3 Site Restriction and Security

Existing fences and gates were deemed sufficient security features for securing the Site during the removal action. This consisted of a fence with a locked gate located along Atwater Street and fences located on the eastern and western sides of the property to restrict Site access.

2.2 Soil Removal

Excavation and removal of the contaminated soil was conducted at the USCG Atwater Facility from April 8 through April 17, 2013. The areas of the Site where soil removal was performed and the excavation depths in each removal area are shown on Figure 3. The total area excavated was approximately 9,200 square feet to depths of 2.5 to 5 feet below ground surface (bgs) and to a depth of 7 feet bgs at one location, for a total of 1,480 cubic yards of soil from 10 separate excavation areas.

The composition of soils encountered during the excavation activities generally consisted of clay or silty clay, although some limited sand, gravel, and silt were also encountered. Most of this material is believed to have originated as fill. The excavation activities were conducted using a backhoe and an excavator.

The northeast side of the large excavation was within 2 to 3 feet of the property line to avoid damage to the fence and to avoid infringing on the adjacent property. A concrete footer was uncovered along part of property line which also prevented excavation beyond the property line. Similarly, the southwest side of the large excavation was limited to within 15 feet of the pier wall to avoid potential damage to the pier structure.

After the anticipated volume of impacted soil was removed from the excavation area, soil samples were collected from the excavation bottom and sidewalls in these areas for field analysis of lead and arsenic utilizing a hand-held, portable X-ray fluorescence (XRF) analyzer as described in the RAWP to help define the extent of the excavations. The XRF field screening results are discussed further in Section 2.2.1. These soil samples were subsequently sent to the laboratory for lead, arsenic, and PAH analyses.

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Approximately 2,440 tons of non-hazardous contaminated soil were excavated from the property and transported to a licensed facility for disposal. All excavated material and wastes were removed from the Site and disposed by April 17, 2013. Details regarding the transport and disposal of the wastes are discussed in 2.2.3.

2.2.1 Field Screening Results

Field screening results ranged from below 3 ppm to 135 ppm for arsenic and from 4 ppm to 1,172 ppm for lead. Subsequent laboratory testing of the collected samples showed that for lead, the XRF field screening results were very similar to the laboratory results. However, for arsenic, the XRF field screening results were significantly greater than the laboratory results. The samples collected from the excavation sidewalls were obtained at a depth of approximately 0 to 2 feet bgs for the shallow (2.5 feet) excavations and at a depth of approximately 3 to 5 feet bgs for the deep (5 feet) excavations. The excavation bottom samples were obtained at an approximate depth of 0 to 2 feet below the bottom of the excavation. Confirmation soil sample field screening results are presented in Table 2, and locations are depicted on Figure 3.

2.2.2 Cultural Artifacts

There were no potential historically significant artifacts unearthed during the excavation activities.

2.2.3 Soil Transport and Disposal Management

The impacted soil was live-loaded into trucks during the removal action to minimize the need for stockpiling soil. Approximately 2,440 tons of non-hazardous soil was transported by the removal contractor to Veolia's Arbor Hills Landfill in Northville, Michigan for disposal. Trucks were placarded in accordance with DOT regulations. The trucks followed a prescribed transportation route to the disposal facility.

The USCG reviewed, approved, and signed all waste profiles prior to shipping the soil from the Site in accordance with RCRA and DOT regulations. Manifests were signed by the Tetra Tech on-site representative on behalf of the USCG. The oversight contractor, Tetra Tech, obtained weight tickets, tare/gross weight slips, and manifests from each truckload of non-hazardous soil transported from the Site. Certificates of disposal were obtained from the disposal facilities. Copies of all transport and disposal documentation are provided in Appendix B and will be kept on file by the USCG.

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Site photographs documenting the soil removal are included in Appendix C.

2.2.4 Shoring and Dewatering

The depths of most of the excavations were 2.5 to 5 feet bgs and did not extend below the groundwater table which was typically found 3 to 5 feet bgs; therefore, shoring was not necessary. One excavation (Area No. 4) was to a depth of approximately 2 feet below the water table (7 feet bgs). However, the excavation was not close to any structures, so no shoring was needed. Primarily due to rainfall, approximately 21,000 gallons of water were collected from the excavations for off-site disposal to Usher Oil Company in Detroit, MI.

2.2.5 Health and Safety

Field investigation and removal activities were conducted in general accordance with the Health and Safety Plan (HASP) contained in Appendix D of the RAWP. Specifically, the HASP addresses the activities related to soil excavation activities, XRF screening, and soil sampling. Level D personal protective equipment (PPE) consisting of steel toe boots, hard hats, nitrile gloves, and safety goggles) were used for the field activities. Excavation areas were blocked off by Site perimeter fencing to prevent access by trespassers to the excavation. Dust suppression (watering) of the excavated soil was not required because dust generation was limited by soil moisture and rainfall during the excavation activities.

The XRF screening instrument was used in general accordance with the manufacturer's directions to prevent exposure to radiation. The XRF device was registered with the Michigan Department of Licensing and Regulatory Affairs Radiation Safety Section and was calibrated in accordance to the manufactures instructions prior to daily use. Nitrile gloves were used during soil sampling to prevent exposure to the contaminated soil.

2.3 Confirmation Soil Sampling Results

2.3.1 Laboratory Results

As prescribed in Section 2.2 of the RAWP, confirmation samples were collected following the soil removal action using the "biased" sampling approach as described in the Section 4.0 of the FSP (Tetra Tech, 2011a). A total of 46 soil samples were collected from the excavated areas, which included 37 excavation sidewall samples

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and 9 excavation bottom samples. The samples were submitted on the same day generated to Trimatrix Laboratories, Inc. located in Grand Rapids, Michigan for analysis of total arsenic, lead, and PAHs in accordance with the QAPP and QAPP Addendum. The excavation laboratory analytical results are presented in Table 3. The laboratory analytical reports are provided in Appendix D.

The total lead laboratory analytical results for the sidewall samples ranged from 2.7 mg/kg to 1,800 mg/kg, and the bottom samples ranged from 13 mg/kg to 720 mg/kg. A 5,900 mg/kg lead bottom sample result (DA-SB-220) is believed to be an anomaly, because the XRF field screening results from this location were less than 30 ppm, and the highest laboratory lead result outside of this sample was 1,800 mg/kg. An aliquot of the sample was re-analyzed, and the lead result was 13 mg/kg which is consistent with the XRF measurements.

The total arsenic laboratory analytical results for the sidewall samples ranged from 2.3 mg/kg to 38 mg/kg, and the bottom samples ranged from 4.2 mg/kg to 18 mg/kg. The laboratory analytical results for BaPEqs for the sidewall samples ranged from 0.014 mg/kg to 7.9 mg/kg, and the bottom samples ranged from 0.13 mg/kg to 7.9 mg/kg.

Based on the laboratory results from some of the original sidewall samples that were greater than RAOs (DASB-209, DASB217, DASB-218, and DASB-243), three additional areas were excavated. The additional excavation areas, shown on Figure 3 as areas A, B, and C, were each excavated to the same depth as the adjacent excavation. A sidewall confirmation sample was collected from each additional excavation and submitted for laboratory analysis. One of these confirmation samples exceeded the RAO for lead, and one other sample exceeded the RAOs for arsenic and lead.

The laboratory analytical results for lead were greater than the RAO of 400 mg/kg for six samples (excluding samples that were removed by the additional excavation). Similarly, the laboratory analytical results for arsenic were greater than the RAO of 7.6 mg/kg for eight samples, and the laboratory analytical results for BaPEqs were greater than the RAO of 2.0 mg/kg for 3 samples. Sample locations where laboratory analytical results exceeded RAOs are shown on Figure 4.

Three samples of the excavation backfill material were collected and submitted for laboratory analysis for arsenic and lead. One sample of the topsoil material was collected and submitted for laboratory analysis for arsenic, lead, and PAHs. All

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samples exhibited lead, arsenic, and BaPEq concentrations that were less than their respective RAOs.

The methods and procedures for collecting soil samples were followed as outlined in the QAPP (Tetra Tech, 2010) and the QAPP Addendum (Tetra Tech, 2011b). Soil samples were collected and cooled to 6 degrees Celsius (°C). In addition to the confirmation samples collected, appropriate quality assurance/quality control (QA/QC) samples were collected and submitted to Trimatrix Laboratories, Inc. located in Grand Rapids, Michigan for analysis of total arsenic, lead, and PAHs as outlined in the QAPP and the QAPP Addendum. QA/QC samples included five field duplicate samples and four matrix spike/matrix spike duplicate samples for analysis.

2.3.2 Statistical Analysis of the Data

Because COC concentrations in some confirmation samples were greater than RAOs, exposure point concentrations (EPCs) were calculated based on data for postremediation surface soil and subsurface soil samples. Surface soil was defined as the 0-2 feet bgs) soil interval and subsurface soil was defined as the soil interval greater than 2 feet bgs (but above the saturated zone). The dataset evaluated is comprised of the data reported for pre-remediation soil samples and confirmation soil samples not excavated during the removal action. The samples from the property line were also excluded from the calculations because these are not representative of the soil at the site. For purposes of human health risk assessment, an EPC is defined as the concentration in an environmental medium to which a human receptor is exposed. With the exception of lead, the EPC is typically the calculated 95 percent upper confidence limit (UCL) on the arithmetic mean. Per USEPA guidance, the arithmetic mean (versus the 95% UCL) is typically used as the EPC when conducting a human health risk assessment for lead. EPCs were calculated using USEPA's ProUCL version 4.1.01 software. The sample detection limit was used as an input for nondetected results in the EPC calculations.

EPCs were calculated for arsenic, lead, and BaPEqs. The results were compared to the RAOs, but none of the EPCs calculated for the COCs were greater than the RAOs. See Appendix F for details of the calculations. The EPCs and RAOs are summarized below.

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сос	EPC FOR SURFACE SOIL, mg/kg	EPC FOR SUBSURFACE SOIL, mg/kg	RAO, mg/kg	
Arsenic	6.8	6.9	7.6	
Lead	129	93.9	400	
BaPEqs	0.68	1.7	2	

2.3.3 Data Validation

The laboratory analytical reports were reviewed and validated in accordance with the QAPP for the USCG Atwater Facility removal action, the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2002), and Region II SOPs that apply to SW-846 Method 7420, laboratory control limits, and professional judgment. As indicated in the RAWP (Tetra Tech, 2013b), Level 3 analytical reporting was requested for all removal confirmation samples. The laboratory's overall system performance and data quality were acceptable and within the guidelines specified in the analytical method. The laboratory data validation reports are included in Appendix E.

The temperatures of two coolers were greater than 6°C. The first cooler contained samples primarily collected on April 9, 2013 and some samples collected on April 10, 2013, and the second cooler contained samples collected on April 10, 2013. Both coolers were picked up on April 10, 2013 and logged in at the laboratory on April 10, 2013. In the first cooler, the temperature blank was 4.3 °C and the 3-sample average temperature was 6.2 °C. For the second cooler, the temperature blank was 8.9 °C and the 3-sample average temperature was 7.6 °C.

All samples were placed on ice at the time of collection, but because the cooler is opened and closed frequently during sample collection to add samples after they are collected and to remove samples for XRF measurement, the sample cooling is not efficient. Based on the times that the last samples were collected and the coolers finally closed and the times of the log-in at the lab, the samples in the first cooler were undisturbed on ice for over 24 hours, but the samples in the second cooler were undisturbed on ice for about 6 hours. The relatively short period of time is not sufficient to cool the soil samples to the target temperature, but the samples were being stored under conditions to maximize the preservation of the samples.

Note that the samples were being analyzed for PAHs which are extremely persistent in the environment in non-aqueous matrices. The PAHs would not be expected to

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degrade significantly over such as short period of time during sample storage. Therefore, the results of the samples in the subject coolers can be used for evaluation of the site. The results were flagged with a "J" qualifier.

2.4 Decontamination Procedures

The equipment utilized by the subcontractor was clean upon arrival at the site. Prior to demobilizing the equipment from the site, soil and sand were removed from the equipment using dry methods. All samples were collected using disposable equipment (such as disposable plastic trowels), so no decontamination water was generated.

2.5 Site Restoration

Restoration of the excavated areas at the Site occurred from April 17 through April 23, 2013. The backfill material consisted of approximately 2 to 4.5 feet of sand and 6 inches of topsoil. Grass seed was then applied and raked into the topsoil. Any areas that do not show vegetative growth following a reasonable amount of time will be reseeded. Photo documentation of site restoration activities is included in Appendix D.

2.6 Site Survey

Following soil removal activities, the locations of the confirmation samples were surveyed using a global positioning system (GPS) unit. The final excavation limits were consistent with the proposed excavation boundaries; no post-excavation survey was performed.

2.7 Groundwater Response Action

In the vicinity of monitoring well MW02 (Excavation Area No. 4) (see Figure 3), the depth of the excavation was extended to 7 feet bgs, approximately 2 feet below the approximate water table as measured in the well and the top of clay in that area, to remove contaminants in the smear zone in order to reduce organic contaminant concentrations in the groundwater. Groundwater was not initially encountered during the excavation, however, rain water and possibly groundwater accumulated in the excavation while waiting for sample analysis to be completed.

New monitoring wells were installed after the removal action to replace MW-01 and MW-02, which were abandoned prior to the excavation.

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Four rounds of quarterly groundwater samples were collected after the excavation in June 2013, September 2013, December 2013, and March 2014. Samples were analyzed for PAHs and Michigan-10 metals (total and dissolved). Results were compared to USEPA MCLs or MDEQ Residential RBSLs if no MCLs were available. All results were less than these criteria. The groundwater monitoring reports are included in Appendix G.

2.8 Fill Sample Analyses (City of Detroit)

The City of Detroit required a broad analysis of the fill. Four composite samples (two of the fill and two of the top soil) were collected by the City and analyzed for volatile organic compounds, semivolatile organic compounds, Michigan-10 metals, and polychlorinated biphenyls. The results were compared to MDEQ Residential Direct Contact Criteria. All results were less than the criteria. A copy of the City of Detroit report is included in Appendix H.

3. Conclusions

Lead-, arsenic-, and PAH-impacted soil were encountered in the soils at the USCG Atwater Facility presumably resulting from historic activities at the Site. A removal action was conducted in accordance with the USEPA's Guidance for Conducting Non-Time-Critical Removal Actions Under CERCLA (USEPA, December 1993). The primary objective of the removal action was to protect public health and welfare and the environment, thereby facilitating the transfer of the subject property to the City of Detroit. RAOs of 400 mg/kg for lead, 7.6 mg/kg for arsenic, and 2.0 mg/kg for BaPEqs were selected for the Site; these RAOs are protective of the anticipated future land use. The removal action activities at the Site occurred from April 8 through April 23, 2013.

The removal of the impacted soils at the USCG Atwater Facility occurred from April 8 through April 17, 2013. Approximately 2,440 tons or 1,480 cubic yards of non-hazardous contaminated soil were excavated from the property and transported to Veolia's Arbor Hills Landfill in Northville, Michigan for disposal. The excavations were backfilled and seeded. Soil samples were collected from the excavations bottoms and sidewalls for laboratory analysis of lead, arsenic, and PAHs. Laboratory analytical results of the soil samples indicated six samples with lead concentrations greater than the lead RAO of 400 mg/kg, eight samples with arsenic concentrations greater than the

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arsenic RAO of 7.6 mg/kg, and three samples with BaPEq concentrations greater than the BaPEqs RAO of 2.0 mg/kg. Sample locations where laboratory analytical results exceeded RAOs are shown on Figure 4.

The USCG, acting as the lead agency and in compliance with the NCP and CERCLA 120 (h), has removed impacted soils at the USCG Atwater Facility to the extent practicable as outlined in the EE/CA and RAWP. Based on the laboratory analytical results of the samples collected from the excavation bottoms and sidewalls, there were several locations where confirmation sampling results were greater than RAOs. Four were sidewall locations along the property boundary, and these results are not representative of the soil on the site because the soil on one side of the sample is off-site and soil on the other side has been replaced with clean fill. Two other sidewall locations were adjacent to the slip and additional excavation was not attempted due to concerns about damaging the pier structure. Similar to the property boundary samples, these locations are not representative of the remaining soil. Four excavation bottom samples were left in place that had concentrations greater than the RAOs, but exposure is limited because 2.5 feet of clean fill was placed over these locations.

Because of the contaminant concentrations that were greater than the RAOs were detected in confirmation samples, a statistical analysis was performed on the data to determine the site exposure concentrations for arsenic, lead, and BaPEqs. The results of this analysis showed that EPCs less than the RAOs, so the site meets the residential exposure limit requirements.

The results of the analyses of the four quarterly groundwater samples were all less than MCLs or MDEQ Residential RBSLs if MCLs were not available. Therefore, the groundwater meets residential exposure limit requirements.

The results of the analysis of the fill samples were less than the MDEQ Residential Direct Contract Criteria which meets the requirements of the City of Detroit.

The current and anticipated future use of this property is recreational. The soil removal action was protective of public health and welfare and the environment for this anticipated land use. Therefore, the USCG Atwater Facility is adequate for transfer based on compliance with the above CERCLA requirements.

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National Oil and Hazardous Substances Pollution Contingency Plan. 40 Code of Federal Regulations (CFR) Part 300. 1994

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Table 1a. Potential Federal and State Chemical-Specific

Constituent of Concern and Media	Authority		ment, Criteria, or Guidance
modit.			mont, on adiabatics
PAHs, Arsenic, and/or Lead in Soil	Federal Advisories	NA	
and of Lead III Coll	Guidance, and Training Material.	INA	ethodology for assessing risks associated with non-
		NA	sess risks associated with lead.
		NA	ntial carcinogenic hazard caused by exposure to
			ncremental cancer risk resulting from exposure to
			ulting from exposure to non-carcinogens in site media. Were
			caused by exposure to contaminants. Iculate potential carcinogenic risks caused by exposure to
		NA	sused to calculate potential carcinogenic risks to children
	State Requirements and/or Criteria.	Natural Environ Act of 1 as amer	with cleanup criteria. See Table 2 in the MAC Rules for se category. Only Residential exposure values are relevant
	State Advisories, Guidance, and Training Material.	NA	epared by the MDEQ to provide guidance on satisfying the it defines land-use categories and provides updated and chments to the operational memorandum provide technical and algorithms used to calculate the criteria.
		NA	repared by the MDEQ to provide guidance on target oil leaching methods; sample preservation; sampling, ples for comparison to generic Criteria

Table 1a. Potential Federal and State Chemical-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, United States Coast Guard Atwater Facility, Detroit, Michigan

Constituent of Concern and Media	Authority	Act	Statute, Regulation, Administrative Code, or Guidance Document	Status	Synopsis of Requirement, Criteria, or Guidance
PAHs, Arsenic, and/or Lead in Air	Federal Regulatory Requirement and/or Criteria.	Clean Air Act (CAA)	42 USC 7409	Applicable.	These rules establish emissions limits for lead and describe test methods and procedures to determine emissions. The national primary and secondary ambient air quality standards for lead and its compounds, measured as elemental lead by a reference method based on Appendix G to 40 CFR 50, or by an equivalent method, are 1.5 micrograms per cubic meter (µg/m³), maximum arithmetic mean averaged over a calendar quarter. There are no ambient air quality standards for PAHs and arsenic.
			42 USC 7409 40 CFR 50.12 and Appendix G to Part 50. 40 CFR 50.12 Appendix G to Part 50		
	Federal Advisories, Guidance, and Training Material.	NA	None.	None.	None.
	State Regulatory Requirement and/or Criteria.	NA	Michigan Air Pollution Control Rules Part 2. Air Use Approval Exemptions R336.1290. Part 2 Air Use Approval Exemptions	Applicable.	Establishes exemption from permit to install for emission units with limited emissions. Establishes thresholds and limits by pollutant type and recordkeeping requirements.
	State Advisories and Guidance.	NA	None.	None.	None.
	Federal Regulatory Requirement and/or Criteria.	Safe Drinking Water Act (SDWA)	42 USC Chapter 6A Public Health Section 300g.	Relevant and Appropriate.	MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the concentration of contaminants in public drinking water supplies based on health effects and technical capabilities. MCLs may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water sources. The MCL for benzo(a)pyrene is 0.0002 milligrams per liter (mg/L). The MCL for arsenic in drinking water is 0.010 mg/L.
		Act 399 of 1976 (SDWA)	42 USC 300g National Primary Drinking Water Standards-Maximum Contaminant Levels (MCLs) (40 CFR 141).		
			40 OFN 141		
	State Regulatory Requirement.	NREPA, Act 451 of 1994	Michigan Compiled Laws Chapter 324, Part 201. MAC Rules, Groundwater Clean-up Criteria. R299.5706, R299.5708, R299.5709, R299.5710. R299.5712, R299.5716, R299.5730, R299.5732, and R299.5744.	Relevant and Appropriate.	See Table1 in the MAC Part 201 Rules for Generic Criteria and Screening Levels. These values were only used in absence of MCLs. Only the reseidential exposure values are relevant and appropriate.
	hou.		MAC Part 201 Rules		

Table 1a. Potential Federal and State Chemical-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, United States Coast Guard Atwater Facility, Detroit, Michigan

Constituent of Concern and Media	Authority	Act	Statute, Regulation, Administrative Code, or Guidance Document	Status	Synopsis of Requirement, Criteria, or Guidance
	State Advisories, Guidance, and Training Material.	NA	RRD Operational Memorandum Number 1 (Part 201 Cleanup Criteria).		This document is a non-promulgated memorandum prepared by the MDEQ to provide guidance on satisfying the cleanup criteria requirements under NREPA Part 201; it defines land-use categories and provides updated and interim cleanup criteria and screening levels. The attachments to the operational memorandum provide technical support documentation for the chemical/physical data and algorithms used to calculate the criteria.
1			MDEQ RRD Op Memo 1	477 (47.00	
		NA	MDEQ RRD Operational Memorandum Number 2 (Part 201 Sampling and Analysis Guidance).		This document is a non-promulgated memorandum prepared by the MDEQ to provide guidance on target detection limits and designated analytical methods; soil leaching methods; sample preservation; sampling, and handling and holding times; and the collection of samples for comparison to generic criteria.
			MDEQ RRD Op Memo 2		

Notes:

NA Not Applicable.

Table 1b. Potential Location-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Requirements, United States Coast Guard Atwater Facility, Detroit, Michigan

Location					
	Authority	Act	Statute, Regulation, Administrative Code, or Guidance Document	Status	Synopsis of Requirement, Criteria, or Guidance
Within or directly adjacent to a protected coastal area or wetland; Federally owned property; Registered National Historic Site; Within or directly adjacent to a wildlife refuge; Within or directly adjacent to Habitat for Endangered or Threatened Species; Within or directly adjacent to stop-over for migratory birds.	Federal Regulatory Requirement.	None.	None.	None.	None.
	Federal Advisories, Guidance, and Training Material.	None.	None.	None.	None.
Activities near Great Lakes Shorelines	State Regulatory Requirement and/or Criteria Land and Water Management Division	NREPA	Part 323, Shorelands Protection and Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). (MCL 324.32301, et seq.) Michigan Administrative Code: R 281.21, et. seq. Formerly Know as Act 245 (1970)	Relevant and Appropriate	Regulates the alteration of the soil and vegetation within a great Lakes shoreland environmental area without a permit. Regulates activities in high-risk erosion areas and flood risk areas (administered by local units of government through the federal flood insurance program) as well as environmental areas. May be applied to environmental sites of contamination that may affect the protection and management of Great Lake shoreland areas.
Within or directly adjacent to Habitat for Endangered or Threatened Species		NREPA.	Michigan Compiled Law 324 Part 365 Endangered Species Protection Programs; cooperative agreements (Section 324.36504). Part 365 Section 324.36504 MAC R322.2.1 through 322.73.1 R322.2.1 - 322.73.1	Relevant and Appropriate.	The department may establish programs, including acquisition of land or aquatic habitat, as is considered necessary for the management of endangered or threatened species. The rules list the specific land and aquatic habit. No endangered or threatened species are likely to inhabit the site.
		NREPA.	Michigan Compiled Law 324 Part 365 Endangered Species Protection – Prohibitions; exceptions (Section 324.36505). Part 365 Section 324.36505	Relevant and Appropriate.	Actions taken or funded involving the transport and possession of endangered or threatened species are unlawful
	State Advisories, Guidance, and Training Material.	None.	None.	None.	None.

Table 1c. Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Requirements, United States Coast Guard Atwater Facility, Detroit, Michigan

Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis
xcavation of contaminated soil nd monitoring or remediation lated to impacts to groundwater.	Federal Regulatory Requirement.	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA),	Federal Facilities 42 United States Code (USC) 9620	Applicable.	These rules require notifications related to hazardous substances prior to the sale or transfer of real property owned by the federal government. This is applicable if a property with residual contamination is transferred.
		as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA).	42 USC 9620		
		(5.11.19)	Reporting Hazardous Substance Activity When Selling or Transferring Federal Real Property (Title 40 Code of Federal Regulations [CFR] 373) 40 CFR 373		
		CERCLA as amended by the 1986 SARA.	National Contingency Plan (42 USC 9605).	Applicable.	These promulgated rules require performing a Removal Site Evaluation and a Removal Action including preparir certain documents (a Quality Assurance Project Plan [QAPP], a field sampling plan [FSP], and an engineering evaluation and cost assessment [EE/CA]), considering federal and state ARARs, soliciting community involvement, and providing notifications prior to the removal action.
			42 USC 9605 National Contingency Plan (40 CFR Section 300.400 through 300.415).		
			40 CFR 300		
		Executive Order 12580 of January 23, 1987, Superfund Implementation.	Executive Order 12580- Superfund Implementation	Applicable.	The Executive Order provides federal agencies, including the United States Coast Guard, the authority to carry their CERLCA responsibilities under the National Contingency Plan as a lead agency.
			Executive Order 12580		
		Resource Conservation and Recovery Act of 1976 (RCRA).	Identification and Listing of Hazardous Waste 42 USC 6921.	Applicable.	These regulations establish requirements for identifying any hazardous wastes that may be generated in the course of the Removal action. No wastes are anticipated to be hazardous.
	Years		42 USC 6921 Identification and Listing of Hazardous Waste (40 CFR 261). 40 CFR 261		
			Land Disposal Restrictions 40 Part 268. 40 CFR 268		
		RCRA.	Standards Applicable to Generators of Hazardous Waste 42 USC 6922. 42 USC 6922	Applicable.	These regulations establish requirements for the on-site management of any hazardous wastes that may be generated in the course of the removal action. No wastes are anticipated to be hazardous.
		10 1	Standards Applicable to Generators of Hazardous Waste (40 CFR 262). 40 CFR 262		
			Standards Applicable to Transporters of Hazardous Waste (40 CFR 263). 40 CFR 263		
	Trends	RCRA.	Standards Applicable to Generators of Hazardous Waste. (42 USC 6923).	Applicable.	These regulations establish requirements for the off-site transportation of any hazardous wastes that may be generated in the course of the removal action. No wastes are anticipated to be hazardous.
		1 1	42 USC 6921 Standards Applicable to Transporters of Hazardous Waste (40 CFR 263). 40 CFR 263		
	Willia		Standards for Universal Waste Management (40 CFR 273). 40 CFR 273		

Table 1c. Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Requirements, United States Coast Guard Atwater Facility, Detroit, Michigan

Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis
Excavation of contaminated soil and monitoring or remediation related to impacts to groundwater.		Hazardous Materials Transport Act (HMTA) as Amended by the Hazardous Materials Transport Uniform Safety Act of 1990.	Transportation of Hazardous Materials (49 USC 5101-5127).	Applicable.	These regulations establish requirements for the off-site transportation of any hazardous wastes that may be generated in the course of the remedial action. No wastes are anticipated to be hazardous.
			49 USC Chapter 51		
			Hazardous Materials Regulations - General Information, Regulations and Definitions (49 CFR 171).		
			49 CFR 171 Hazardous Materials Regulations -		
			Hazardous materials regulations Hazardous materials table, special provisions, hazardous materials communications, emergency response information, and training requirements (49 CFR 172). 49 CFR 172		
			Hazardous Materials Regulations Shippers – General Requirements for Shipments and Packages (49 CFR 173) 49 CFR 173		
		Clean Air Act of 1970.	National primary and secondary ambient air quality standards 42 USC 7409.	Applicable.	Engineering controls are required to reduce emissions associated with excavation and transportation, as needed, to maintain ambient air quality standards.
			42 USC 7409		
			National Primary and Secondary Ambient Air Quality Standards (40 CFR 50) 40 CFR 50		
			Water Pollution Prevention and Control, Standards and Enforcement, 33 USC 1313 through 1314.	Applicable.	This regulation establishes requirements for storm-water discharges associated with industrial activity, including waste disposal areas. Soil remediation may require consideration of storm-water regulations.
			USC 33		
			National Pollution Discharge Elimination System (NPDES) (40 CFR 122 – 125). 40 CFR Parts 122-125		
			Occupational Safety & Health Administration Act (Public Law 91-596 84 STAT. 1590).	Applicable.	These regulations specify requirements for health and safety protection for workers potentially exposed to contaminants during hazardous waste site remediation.
			PL 91-596 OSHA Occupational Safety & Health Administration (29 CFR 1910).		
		2	29 CFR 1910		
		OSHA.	Occupational Safety & Health Administration Act (Public Law 91-596 84 STAT. 1590). PL 91-596 OSHA ACT	Applicable.	These regulations specify requirements for health and safety protection for workers at construction sites.
			Occupational Safety & Health Administration (29 CFR 1926). 29 CFR 1926		

Table 1c. Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Requirements, United States Coast Guard Atwater Facility, Detroit, Michigan

Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis
Excavation of contaminated soil and monitoring or remediation related to impacts to groundwater.	State Regulatory Requirement.	Natural Resources Environmental Protection Act of 1994, Public Act 451 as amended (NREPA).	Soil Conservation, Erosion, and Sedimentation Control Part 91 Michigan Administrative Code (MAC) R323.1702(1), R323.1709 (2), R323.1709 (3), R323.1709 (4), R323.1709 (5).	Relevant and Appropriate.	These regulations specify requirements for earth change actions including erosion and sedimentation control measures that will effectively reduce accelerated soil erosion and resulting sedimentation. These regulations require the construction of temporary or permanent control measures to remove sediment from run-off water before it leaves the site.
		NREPA.	Michigan Compiled Law 324, Part 55 Section 324.5524 Air Pollution Control. MCL 324 Part 55	Relevant and Appropriate.	These promulgated statues and rules are associated with fugitive dust emissions. Dust from excavations and handling will be controlled using measures such as water sprays.
		NREPA.	MAC Air Pollution Control Rules 336.1370 through 336.1374. Michigan Air Pollution Control Rules Michigan Compiled Law 324, Part 111 Hazardous Waste Management Sections 324.11138 and 324.11132a.	Relevant and Appropriate.	Defines hazardous waste and establishes requirements for hazardous waste generators, transporters, and treatment/storage/disposal facilities. Regulates the generation, transport, treatment, storage, and disposal of hazardous wastes from site remediation. Regulates closure, post-closure, and corrective action for hazardous waste treatment, storage, and disposal facilities. Remedial action may generate hazardous waste and involve management of hazardous waste. May be applied to off-site disposal of hazardous waste. Used for determining how and in what type of disposal facility contaminated media may be removed to. May be applied to construction and operation of on-site treatment, storage or disposal units relative to requirements for characterization and handling of hazardous waste. Applied to the excavation of certain contaminated media. Note: The State of Michigan has authorization to administer Federal RCRA Subtitle C in the State.
			Section 324.11138 Section 324.11132a MAC R299.9208, R299.9209, R299.9212, R299.9216, R299.9217, R299.9301- 9308, R299.9311, R299.9401-9413. Part 111 Rules		No wastes are anticipated to be hazardous.
		NREPA.	Michigan Compiled Law 324, Part 121 Sections 324.12103, 324.12109. Part 121 Section 324.12103 Part 121 Section 324.12109	Relevant and Appropriate.	These are promulgated statues and rules associated with liquid industrial waste management, such as decontamination fluid.

Table 1c. Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Requirements, United States Coast Guard Atwater Facility, Detroit, Michigan

A self-up	Authority	Ant ou Chatuta	Regulation, Administrative Code, or Guidance Document	Status	Cunoncia
Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis
Excavation of contaminated soil and monitoring or remediation related to impacts to groundwater.	Federal Advisories and Guidance.	None.	None.	NA.	NA.
	State Advisories and Guidance.	NA.	MDEQ Water Bureau Soil Erosion and Sedimentation (SES) Control Program, Soil Erosion and Sedimentation Training Manual SES Training Manual	To Be Considered.	This document includes non-promulgated guidance material prepared to assist in the design and construction of erosion and sedimentation control measures.
		NA.	MDEQ Remediation and Redevelopment Division (RRD) Operational Memorandum Number 2 (Part 201 Sampling and Analysis Guidance) MDEQ RRD Op Memo 2	To Be Considered.	This document is a non-promulgated memorandum prepared by the MDEQ to provide guidance on target detection limits and designated analytical methods; soil leaching methods; sample preservation, sampling, and handling and holding times; and the collection of samples for comparison to generic criteria.
			MDEQ RRD Operational Memorandum Number 4 (Site Characterization and Remediation Verification)	To Be Considered.	This document is a non-promulgated memorandum prepared by the MDEQ to provide direction for generating data for facility characterization (nature, extent, and impact of a release or threat of a release) and monitoring to support remedial decisions and assessing exposure pathways for compliance with cleanup criteria. The sampling strategies identified in this document represent acceptable approaches and ranges of appropriate assumptions that are intended to support consistent exercise of professional judgment in a manner that produces satisfactory outcomes. Alternative approaches may be used if the person proposing the alternative demonstrates that the approach meets all requirements of the statute and rules.
			MDEQ RRD Op Memo 4		

Notes: NA Not Applicable.



CONFIRMATION SOIL SAMPLE FIUELD SCREENING RESULTS REMOVAL ACTION COMPLETION REPORT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 1 OF 4

Sample Location	Sample Identification	Excavation Area Location	XRF Analysis Date	Analyte	1st XRF Reading (ppm)	2nd XRF Reading (ppm)	3rd XRF Reading (ppm)	XRF Limit of Detection (ppm)	Automatically Generated XRF Average (ppm)	Fixed-Base Laboratory Analysis (mg/kg)	COMMENTS
DA-SB-201	DA-SB-201	Area 1	4/11/2013	Lead	132	49	27	4	69	66	dk grey silty clay - wet
DA-3B-201	DA-3B-201	Aleai	4/11/2013	Arsenic	11	10	7	3	9	6.7	an grey sity clay - wet
DA-SB-202	DA-SB-202	Area 1	4/11/2013	Lead	30	23	40	4	31	39	dk grey silty clay - wet
DA-0D-202	DA-35-202	Aleai	4/11/2013	Arsenic	7	6	7	3	7	6.3	uk grey sirry clay - wet
DA-SB-203	DA-SB-203	Area 1	4/11/2013	Lead	23	18	25	4	22	29	dk grey silty clay - wet
DA-3D-203	DA-3B-203	Aleai	4/11/2013	Arsenic	7	12	11	3	10	5.2	uk grey sitty clay - wet
DA-SB-204	DA-SB-204	Area 1	4/11/2013	Lead	37	104	29	4	57	40	dk grey silty clay - wet
DA-3D-204	DA-3B-204	Aleal	4/11/2013	Arsenic	6	26	7	3	13	6.2	uk giey siity clay - wet
DA-SB-205	DA-SB-205	Area 1	4/11/2013	Lead	35	27	20	4	27	21	dk grey silty clay - wet
DA-3D-203	DA-30-203	Aleai	4/11/2013	Arsenic	9	8	11	3	9	6.1	uk grey siny ciay - wet
DA-SB-206	DA-SB-206	Area 1	4/11/2013	Lead	450	642	297	4	463	410	dk grov silhy slav - wat
DA-36-200	DA-3B-200	Area	4/11/2013	Arsenic	27	21	13	3	20	8.9	dk grey silty clay - wet
DA-SB-207	DA-SB-207	Area 1	4/11/2013	Lead	141	140	90	4	124	99	dk grey silty clay - wet
	DA-3B-201	Alea i	4/11/2013	Arsenic	17	11	10	3	13	6,1	uk grey sitty clay - wet
DA-SB-208	DA-SB-208	Area 2	4/14/2013	Lead	297	140	165	4	201	340	grey, rocky silty clay
DA-3D-200	DA-3D-200	Aleaz	4/14/2013	Arsenic	15	22	14	3	17	7.7	grey, rocky sirty clay
DA-SB-209	DA-SB-209	Area 2	4/14/2013	Lead	536	581	621	4	579	510	grey, silty clay
DA-3D-209	DA-3B-209	Alea 2	4//4/2013	Arsenic	20	22	32	3	25	11	grey, snry clay
DA-SB-210	DA-SB-210	Area 2	4/14/2013	Lead	5.4	5.5	5.5	4	5	2.7	brn, tan sand (fill around drain
DA-0D-210	DA-08-210	Aica z	4,714,72010	Arsenic	4.5	4.5	4.5	3	5	2.3	pipe)
DA-SB-211	DA-SB-211	Area 2	4/14/2013	Lead	96	24	423	4	181	43	duplicate, grey clay
DA-05-211	DA-00-211	Aleaz	4/14/2010	Arsenic	12	9	15	3	12	5.8	dupitoate, grey clay
DA-SB-212	DA-SB-212	Area 2	4/14/2013	Lead	111	206	112	4	143	220	black silty soil, some clay
DA-3D-212	DA-36-212	Aleaz	4/14/2013	Arsenic	17	13	15	3	15	5.4	black sitty son, some clay
DA-SB-213	DA-SS-213-0002	Area 3	4/10/2013	Lead	446	715	605	4	589	720	black rocky soil w someclay
		Aice	-7/10/2010	Arsenic	19	37	34	3	30	8.3	Jack roomy son it someoney
DA-SB-214	DA-SS-214-0002	Area 3	4/10/2013	Lead	332	336	219	4	296	290	black rocky soil w someclay
	DA-33-214-0002		-1110/2019	Arsenic	23	16	14	3	18	8.7	Distriction was interested as

CONFIRMATION SOIL SAMPLE FIUELD SCREENING RESULTS REMOVAL ACTION COMPLETION REPORT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 2 OF 4

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Sample Location	Sample Identification	Excavation Area Location	XRF Analysis Date	Analyte	1st XRF Reading (ppm)	2nd XRF Reading (ppm)	3rd XRF Reading (ppm)	XRF Limit of Detection (ppm)	Automatically Generated XRF Average (ppm)	Fixed-Base Laboratory Analysis (mg/kg)	COMMENTS
DA-SB-215	DA-SS-215-0002	Area 3	4/10/2013	Lead	1172	426	441	4	680	370	black rocky soil w compoling
DA-3B-213	DA-55-215-0002	Areas	4/10/2013	Arsenic	53	62	46	3	54	7.2	black rocky soil w someclay
DA-SB-216	DA-SS-216-0002	Area 3	4/10/2013	Lead	250	416	202	4	289	180	black rocky soil w someclay
DA-3B-216	DA-33-216-0002	Aleas	4/10/2013	Arsenic	26	· 16	30	3	24	6.8	black focky soil w soffieciay
DA-SB-217	DA-SS-217-0002	Area 3	4/10/2013	Lead	285	647	672	4	535	530	black rocky soil w someclay
UA-3B-217	DA-33-217-0002	Area 3	4/10/2013	Arsenic	37	42	40	3	40	9.0	black rocky soil w someciay
DA-SB-218	DA-SS-218-0002	A 2	4/10/2013	Lead	578	648	675	4	634	660	block rocky soil w someolog
DA-30-216	DA-33-216-0002	Area 3	4/10/2013	Arsenic	28	23	34	3	28	9.2	black rocky soil w someclay
DA-SB-219	DA-SS-219-0002	Area 3	4/10/2013	Lead	300	361	206	4	289	270	hand blue array along
DA-30-219	DA-55-219-0002	Area 3	4/10/2013	Arsenic	31	25	25	3	27	6.0	hard blue-grey clay
DA-SB-220	DA SS 220 0002	A 2	4/10/2013	Lead	20	26	19	4	22	5900/13	hand blue area alou
DA-3D-220	DA-SS-220-0002	Area 3	4/10/2013	Arsenic	7	7	7	3	7	18	hard blue-grey clay
DA-SB-221	DA-SS-221-0002	Area 2	4/10/2013	Lead	107	58	83	4	83	35	hard blue grownley
DA-3D-221	DA-33-221-0002	Area 3	4/10/2013	Arsenic	- 14	11	17	3	14	5.1	hard blue-grey clay
DA-SB-222	DA-SS-222-0002	Area 3	4/10/2013	Lead	977	794	26	4	599	720	based blue grow elev
DA-36-222	DA-33-222-0002	Alea 3	4/10/2013	Arsenic	78	22	5.9	3	35	5.9	hard blue-grey clay
DA-SB-222	DA-SS-222-0002	Area 3	4/10/2013	Lead	609	505	1042	4	719	720	Duplicate read SB222 after
DA-3D-222	DA-33-222-0002	Area 3	4/10/2013	Arsenic	21	21	68	3	37	5.9	thoroughly mixing the sample
DA-SB-223	DA-SS-223-0002	Area 3	4/10/2013	Lead	27	23	62	4	37	16	hard blue-grey clay
DA-3B-223	DA-55-225-0002	Area 3	4/10/2013	Arsenic	9	8	10	3	9	4.2	liaru biue-grey ciay
DA-SB-224	DA-SB-224	Area 4	4/11/2013	Lead	17	51	42	4	37	63	hard blue-grey clay
DA-3D-224	UA-36-224	Alea 4	4/11/2013	Arsenic	6	11	13	3	10	5.1	liard blue-grey clay
DA-SB-225	DA-SB-225	Area 4	4/11/2013	Lead	22	56	54	4	44	31	hard blue-grey clay
DA-36-225	UA-36-223	Alea 4	4/11/2013	Ārsenic	5.9	10	10	3	9	2.6	naid blue-grey clay
DA-SB-226	DA-SB-226	Area 4	4/11/2013	Lead	25	28	27	4	27	35	hard blue-grey clay
DA-3D-220	DA-36-220	Alta 4	4/11/2013	Arsenic	8	6	5.8	3	7	4.2	natu bide-grey cidy
DA-SB-227	DA-SB-227	Area 4	4/11/2013	Lead	79	96	123	4	99	72	hard blue-grey clay
DA-30-441	DM-30-221	Alea 4	7/11/2013	Arsenic	10	9	12	3	10	5.9	inaid blue-grey clay



CONFIRMATION SOIL SAMPLE FIUELD SCREENING RESULTS REMOVAL ACTION COMPLETION REPORT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 3 OF 4

Sample Location	Sample Identification	Excavation Area Location	XRF Analysis Date	Analyte	1st XRF Reading (ppm)	2nd XRF Reading (ppm)	3rd XRF Reading (ppm)	XRF Limit of Detection (ppm)	Automatically Generated XRF Average (ppm)	Fixed-Base Laboratory Analysis (mg/kg)	COMMENTS
DA-SB-228	DA-SB-228	Area 5	4/11/2013	Lead	8	8	14	4	10	6.9	blue-gray clay
DA-3B-226	DA-3B-226	Aleas	4/11/2013	Arsenic	6	6	11	3	8	5.1	bide-gray clay
DA-SB-229	DA-SB-229	Area 5	4/11/2013	Lead	11	7	12	4	10	6.5	blue-gray clay
DA-3D-229	DA-3D-229	Alea 3	4/11/2013	Arsenic	9	5.6	6	3	7	6.1	
DA-SB-230	DA-SB-230	Area 5	4/11/2013	Lead	8	18	7	4	11	6.9	blue-gray clay
DA-3B-230	DA-3B-230	Alea 5	4/11/2013	Arsenic	8.7	7	5.4	3	7_	4.3	
DA-SB-231	DA-SB-231	Area 5	4/11/2013	Lead	17	31	19	4	22	7.5	blue-gray clay
DA-3B-231	DA-3B-231	Alea 5	4/11/2013	Arsenic	7	9	6	3	7	5.1	biue-gray clay
DA-SB-232	DA-SB-232	Area 6	4/14/2013	Lead	4.6	5.8	8.8	4	6	7.0	grey hardclay
DA-3B-232	DA-3B-232	Aleao	4/14/2013	Arsenic	3.6	4.6	7	3	5	6.1	grey natural
DA-SB-233	DA-SB-233	Area 6	4/14/2013	Lead	7.1	19	17	4	14	16	grey hard clay
DA-36-233	DA-3B-233	Alea o	4/14/2013	Arsenic	7	7	10	3	8	5.8	grey nard clay
DA-SB-234	DA-SB-234	Area 6	4/14/2013	Lead	145	151	130	4	142	220	black silty soil
DA-3B-234	DA-3B-234	Aleao	4/14/2013	Arsenic	8	9	8	3	8	6.6	black sitty son
DA-SB-235	DA-SB-235	Area 6	4/14/2013	Lead	1113	1162	703	4	993	1800	rocky, black silty soil
DA-3B-235	DA-3B-235	Alea o	4/14/2013	Arsenic	134	135	. 66	3	112	38	TOCKY, DIACK SILLY SOIL
DA-SB-236	DA-SB-236	Area 6	4/14/2013	Lead	24	31	13	4	23	26	It grey crushedshell
DA-3D-230	DA-3B-230	Aleau	4/14/2013	Arsenic	5.7	5.8	7.8	3	6	4.9	it grey crusheushen
DA-SB-237	DA-SB-237	Area 6	4/14/2013	Lead	15	9	178	4	67	31	grey hard clay
DA-3B-23/	DA-3B-231	Alea o	4/14/2013	Arsenic	12	6	11	3	10	2.5	grey nard clay
DA-SB-238	DA-SB-238-0305	Area 7	4/9/2013	Lead	62	36	52	4	50	56	black soil with clay and rocky
DA-36-236	DA-3B-236-0305	Aiea /	4/9/2013	Arsenic	ND	ND	ND	3	2	4.5	black soll with clay and rocky
DA-SB-239	DA-SB-239-0305	Area 7	4/9/2013	Lead	21	18	22	4	20	13	black soil with clay and rocky
DA-36-239	DA-56-239-0309	Alea	4/9/2013	Arsenic	17	ND	12	3	10	5.5	black soll with clay and rocky
DA-SB-240	DA-SB-240-0305	Area 7	4/9/2013	Lead	276	146	179	4	200	120	black soil with clay and rocky
DA-3B-240	DA-3D-240-0305	Alea /	4/3/2013	Arsenic	30	15	13	3	19	7.2	Sieck Son With Clay and focky
DA-SB-241	DA-SB-241-0305	Area 7	4/9/2013	Lead	631	198	246	4	358	320	black soil with clay and rocky
DA-30-241	DA-3B-241-0303	Alta i	4/3/2013	Arsenic	22	25	ND	3	16	7.7	Diack Soll With Clay and Tocky

CONFIRMATION SOIL SAMPLE FIUELD SCREENING RESULTS REMOVAL ACTION COMPLETION REPORT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 4 OF 4

Sample Location	Sample Identification	Excavation Area Location	XRF Analysis Date	Analyte	1st XRF Reading (ppm)	2nd XRF Reading (ppm)	3rd XRF Reading (ppm)	XRF Limit of Detection (ppm)	Automatically Generated XRF Average (ppm)	Fixed-Base Laboratory Analysis (mg/kg)	COMMENTS		
DA-SB-242	DA-SB-242-0305	Агеа 7	4/9/2013	Lead	14	18	23	4	18	18	Extremely strong petroleum-		
DA-30-242	DA-30-242-0303	Area /	4/9/2013	Arsenic	11	14	12	3	12	7.0	like odor.		
DA-SB-243	DA-SB-243-0305	4 7 4/2/2010	A 7	4/0/2042	4/0/0040	Lead	44	45	144	4	78	38	block sell with olev and recky
UA-3B-243	DA-30-243-0305	Area 7	4/9/2013	Ārsenic	9	12	29	3	17	6.2	black soil with clay and rocky		

Field screening of confirmation soil samples was performed with an X-ray fluorescence (XRF) analyzer for arsenic and lead.

ND = Not Detected.

ppm = Parts per Million.

mg/kg = Milligrams per Kilogram.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 1 OF 9

LOCATION		DASB201	DASB202		DASB203	 	DASB204	DASB205
SAMPLE IDENTIFICATION	Removal	DASS201-0002	DASS202-0002	DASS203-0002	DASS203-0002-AVG	DASS203-0002-D	DASS204-0002	DASS205-0002
SAMPLE DATE	Action	20130411	20130411	20130411	20130411	20130411	20130411	20130411
TOP DEPTH, FEET BGS	Objective	0	0	0	0	0	0	0
BOTTOM DEPTH, FEET BGS		2	2	2	2	2	2	2
NOTES				_				
METALS (MG/KG)								
ARSENIC	7.6	6.7	6.3	5.2	5.25	5.3	6.2	6.1
LEAD	400	66	39	29	29	29	40	21
POLYCYCLIC AROMATIC HYDROCARBONS (M	IG/KG)						· mayoro	1
BAP EQUIVALENT	2	0.32	0.94	0.28	0.62	0.96	0.25	1.0
2-METHYLNAPHTHALENE	NC	0.1 U	0.037 J	0.1 U	0.1 U	0.1 U	0.11 U	0.081 J
ACENAPHTHENE	NC	0.1 U	0.26	0.1 U	0.064 J	0.064 J	0.11 U	0.23
ACENAPHTHYLENE	NC	0.1 U	0.11 U	0.1 U	0.046 J	0.046 J	0.11 U	0.1 U
ANTHRACENE	NC	0.055 J	0.68	0.093 J	0.2815	0.47 J	0.078 J	0.51
BENZO(A)ANTHRACENE	NC	0.27	0.82	0.22 J	0.57	0.92 J	0.18	0.89
BENZO(A)PYRENE	NC	0.23	0.64	0.2 J	0.415	0.63 J	0.18	0.74
BENZO(B)FLUORANTHENE	NC	0.28	0.76	0.23 J	0.52	0.81 J	0.23	0.95
BENZO(G,H,I)PERYLENE	NC	0.11	0.27	0.097 J	0.1985	0.3 J	0.11 J	0.35
BENZO(K)FLUORANTHENE	NC	0.18	0.46	0.14 J	0.27	0.4 J	0.11	0.5
CHRYSENE	NC	0.26	0.91	0.24 J	0.515	0.79 J	0.22	0.84
DIBENZO(A,H)ANTHRACENE	NC	0.026 J	0.11	0.022 J	0.071	0.12	0.021 J	0.084 J
FLUORANTHENE	NC	0.42	1.6	0.41 J	1.055	1.7 J	0.31	1.5
FLUORENE	NC	0.028 J	0.37	0.1 U	0.085	0.12	0.11 U	0.19
INDENO(1,2,3-CD)PYRENE	NC	0.095 J	0.26	0.081 J	0.1855	0.29 J	0.088 J	0.32
NAPHTHALENE	NC	0.1 U	0.052 J	0.1 U	0.1 U	0.1 U	0.11 U	0.42
PHENANTHRENE	NC	0.28	1.9	0.21 J	0.855	1.5 J	0.17	1.5
PYRENE	NC	0.49	1.6	0.44 J	1.17	1.9 J	0.36	1.8

Shaded cell indicates concentration greater than Removal Action Objective.

BGS - Below ground surface.

D - Duplicate sample.

J - Estimated concentration.

MG/KG - Milligrams per kilogram.

NA - Not analyzed.

NC - No criterion (Removal Action Objective).

U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT **USCG ATWATER FACILITY** DETROIT, MICHIGAN PAGE 2 OF 9

LOCATION SAMPLE IDENTIFICATION	Removal	DASB206 DASS206-0002	DASB207 DASS207-0002	DASB208 DASS208-0002	DASB209 DASS209-0002	DASB210 DASS210-0002	DASB211 DASS211-0002	DASB212 DASS212-0002
SAMPLE DATE	Action	20130411	20130411	20130412	20130412	20130412	20130412	20130412
TOP DEPTH, FEET BGS	Objective	2.5	2.5	0	0	0	2. 5	2.5
BOTTOM DEPTH, FEET BGS	ļ	4.5	4.5	2	2	2	4.5	4.5
NOTES					EXCAVATED			
METALS (MG/KG)	:		1700		11222) ;	
ARSENIC	7.6	8.9	6.1	7.7	11	2,3	5.8	5.4
LEAD	400	410	99	340	510	2.7	43	220
POLYCYCLIC AROMATIC HYDROCARBONS (M	G/KG)				4		·	<u></u>
BAP EQUIVALENT	2	0.39	0.28	0.38	0.85	0.019 U	0.13	0.37
2-METHYLNAPHTHALENE	NC	0.11 U	0.0067 J	0.096 U	0.034 J	0.019 U	0.099 U	0.013 J
ACENAPHTHENE	NC	0.035 J	0.016 J	0.033 J	0.079	0.019 U	0.099 U	0.21
ACENAPHTHYLENE	NC	0.11 U	0.014 J	0.096 U	0.017 J	0.019 U	0.099 U	0.013 J
ANTHRACENE	NC	0.18	0.057	0.089 J	0.18	0.019 U	0.099 U	0.1
BENZO(A)ANTHRACENE	NC	0.29	0.26	0.32	0.63	0.019 U	0.052 J	0.36
BENZO(A)PYRENE	NC	0.26	0,2	0.27	0.57	0.019 U	0.068 J	0.26
BENZO(B)FLUORANTHENE	NC	0.35	0.23	0.32	0.65	0.019 U	0.049 J	0.33
BENZO(G,H,I)PERYLENE	NC	0.13	0.093	0.16	0.34	0.019 U	0.039 J	0.091
BENZO(K)FLUORANTHENE	NC	0.21	0.12	0.14	0.38	0.019 U	0.039 J	0.17
CHRYSENE	NC	0.35	0.22	0.29	0.65	0.019 U	0.052 J	0.35
DIBENZO(A,H)ANTHRACENE	NC	0.055 J	0.025	0.031 J	0.12	0.019 U	0.099 U	0.027
FLUORANTHENE	NC	0.49	0.31	0.43	0.99	0.019 U	0.07 J	0.51
FLUORENE	NC	0.057 J	0.02	0.033 J	0.068	0.019 U	0.099 U	0.14
INDENO(1,2,3-CD)PYRENE	NC	0.1 J	0.089	0.12	0.31	0.019 U	0.039 J	0.11
NAPHTHALENE	NC	0.11 U	0.02 U	0.096 U	0.03 J	0.019 U	0.099 U	0.024
PHENANTHRENE	NC	0.41	0.2	0.32	0.84	0.019 U	0.049 J	0.45
PYRENE	NC	0.57	0.41	0.61	1.1	0.019 U	0.11	0.7

Shaded cell indicates concentration greater than Removal Action (BGS - Below ground surface.

D - Duplicate sample.

J - Estimated concentration.

MG/KG - Milligrams per kilogram. NA - Not analyzed.

NC - No criterion (Removal Action Objective).
U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT **USCG ATWATER FACILITY** DETROIT, MICHIGAN PAGE 3 OF 9

LOCATION SAMPLE IDENTIFICATION	Damasial	DASB213 DASS213-0002	DASB214 DASS214-0002	DASB215 DASS215-0002	DASB216 DASS216-0002	DASB217 DASS217-0002	DASB218 DASS218-0002	DASB219 DASS219-0002
SAMPLE DATE	Removal Action	20130410	20130410	20130410	20130410	20130410	20130410	20130410
1		20130410	20130410	20130410	20130410	20130410	20130410	2.5
TOP DEPTH, FEET BGS	Objective	U	0	0	_	0		
BOTTOM DEPTH, FEET BGS		2	2	2	2	2	2	4.5
NOTES		PROPERTY LINE	PROPERTY LINE	EXCAVATED	PIER WALL	EXCAVATED	EXCAVATED :	
METALS (MG/KG)	7							
ARSENIC	7.6	8.3	8.7	7.2	6.8	9	9.2	6
LEAD	400	720	290	370	180	530	660	270
POLYCYCLIC AROMATIC HYDROCARBONS (M	IG/KG)			: :	;		* A THEORY	<u> </u>
BAP EQUIVALENT	2	1.8	0.60	0.41	0.35	2.9	2.5	7.9
2-METHYLNAPHTHALENE	NC	0.19 UJ	0.21 UJ	0.19 UJ	0.21 UJ	0.96 UJ	0.2 UJ	0.42 UJ
ACENAPHTHENE	NC	0.14 J	0.21 UJ	0.19 UJ	0.21 UJ	0.96 UJ	0.27 J	0.92 J
ACENAPHTHYLENE	NC	0.069 J	0.21 UJ	0.19 UJ	0.21 UJ	0.96 UJ	0.2 UJ	0.42 UJ
ANTHRACENE	NC	0.44 J	0.091 J	0.17 J	0.21 UJ	0.48 J	0.92 J	3.5 J
BENZO(A)ANTHRACENE	NC NC	1.1 J	0.31 J	0.24 J	0.18 J	2 J	2 J	7 J
BENZO(A)PYRENE	NC	1.2 J	0.38 J	0.25 J	0.2 J	2.1 J	1.8 J	5.6 J
BENZO(B)FLUORANTHENE	NC	1.3 J	0.58 J	0.26 J	0.17 J	2.2 J	2.1 J	6.1 J
BENZO(G,H,I)PERYLENE	NC	0.69 J	0.32 J	0.1 J	0.12 J	1.4 J	1.1 J	2.9 J
BENZO(K)FLUORANTHENE	NC	0.9 J	0.4 J	0.21 J	0.15 J	1.2 J	1.1 J	4.7 J
CHRYSENE	NC	1.2 J	0.46 J	0.3 J	0.2 J	2.1 J	2.1 J	6 J
DIBENZO(A,H)ANTHRACENE	NC	0.25 J	0.1 J	0.19 UJ	0.21 UJ	0.28 J	0.22 J	0.64 J
FLUORANTHENE	NC	2.5 J	0.47 J	0.36 J	0.27 J	3.7 J	3.9 J	13 J
FLUORENE	NC	0.12 J	0.21 UJ	0.19 UJ	0.21 UJ	0.96 UJ	0.25 J	1.4 J
INDENO(1,2,3-CD)PYRENE	NC	0.61 J	0.25 J	0.19 UJ	0.091]	1 J	0.9 J	2.7 J
NAPHTHALENE	NC	0.085 J	0.21 UJ	0.19 UJ	0.21 UJ	0.96 UJ	0.2 UJ	0.42 UJ
PHENANTHRENE	NC	1.9 J	0.26 J	0.24 J	0.11 J	1.8 J	3 J	8.9 J
PYRENE	NC	2.4 J	0.73 J	0.53 J	0.35 J	4.9 J	5 J	14 J

Shaded cell indicates concentration greater than Removal Action (BGS - Below ground surface.
D - Duplicate sample.

J - Estimated concentration.

MG/KG - Milligrams per kilogram.

NA - Not analyzed.

NC - No criterion (Removal Action Objective).

U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 4 OF 9

LOCATION		DASB220	SB220 DASB221		DASB222		DASB223	DASB224
SAMPLE IDENTIFICATION	Removal	DASS220-0002	DASS221-0002	DASS222-0002	DASS222-0002-AVG	DASS222-0002-D	DASS223-0002	DASB224-0507
SAMPLE DATE	Action	20130410	20130410	20130410	20130410	20130410	20130410	20130411
TOP DEPTH, FEET BGS	Objective	2.5	2.5	2.5	2.5	2.5	2.5	5
BOTTOM DEPTH, FEET BGS	,	4.5	4.5	4.5	4.5	4.5	4.5	7
NOTES		413	4.5	4.5	4.5	4.5	415	
METALS (MG/KG)		*				_	•	1
ARSENIC	7.6	18	5.1	5.9 J	5.35	4.8	4.2	5.1
LEAD	400	13	35	720	595	470	16	63
POLYCYCLIC AROMATIC HYDROCARBONS (M	G/KG)	á i	*			1 1	:	
BAP EQUIVALENT	2	0.38	0.15	1.00	1.5	2.0	1.8	0.046
2-METHYLNAPHTHALENE	NC	0.0068 J	0.019 UJ	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	0.02 U
ACENAPHTHENE	NC	0.061 J	0.013 J	0.2 UJ	0.155	0.21 J	0.2 UJ	0.015 J
ACENAPHTHYLENE	NC	0.0068 J	0.0054 J	0.2 UJ	0.058 J	0.058 J	0.2 UJ	0.02 U
ANTHRACENE	NC	0.25 J	0.036 J	0.12 J	0.325	0.53 J	0.22 J	0.014 J
BENZO(A)ANTHRACENE	NC	0.38 J	0.11 J	0.6 J	1	1.4 J	1.4 J	0.041
BENZO(A)PYRENE	NC	0.27 J	0.1 J	0.72 J	1.06	1.4 J	1.3 J	0.033
BENZO(B)FLUORANTHENE	NC	0.27 J	0.11 J	0.78 J	1.19	1.6 J	1.6 J	0.039
BENZO(G,H,I)PERYLENE	NC	0.13 J	0.066 J	0.44 J	0.65	0.86 J	0.7 J	0.02
BENZO(K)FLUORANTHENE	NC	0.16 J	0.084 J	0.45 J	0.685	0.92 J	0.79 J	0.019 J
CHRYSENE	NC	0.29 J	0.11 J	0.62 J	0.91	1.2 J	1.5 J	0.039
DIBENZO(A,H)ANTHRACENE	NC	0.031 J	0.017 J	0.097 J	0.1435	0.19 J	0.16 J	0.0037 J
FLUORANTHENE	NC	0.61 J	0.19 J	0.89 J	1.595	2.3 J	2.4 J	0.067
FLUORENE	NC	0.091 J	0.013 J	0.2 UJ	0.19 J	0.19 J	0.2 UJ	0.0069 J
INDENO(1,2,3-CD)PYRENE	NC	0.12 J	0.051 J	0.37 J	0.565	0.76 J	0.63 J	0.013 J
NAPHTHALENE	NC	0.019 UJ	0.019 UJ	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	0.02 U
PHENANTHRENE	NC	0.65 J	0.13 J	0,37 J	1.035	1.7 J	0.21 J	0.058
PYRENE	NC	0.71 J	0.22 J	1.1 J	1.85	2.6 J	2.4 J	0.081

Shaded cell indicates concentration greater than Removal Action (

BGS - Below ground surface.

D - Duplicate sample.

J - Estimated concentration.

MG/KG - Milligrams per kilogram.

NA - Not analyzed.

NC - No criterion (Removal Action Objective).

U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT **USCG ATWATER FACILITY** DETROIT, MICHIGAN PAGE 5 OF 9

LOCATION		DASB225	DASB226	DASB227	DASB228		DASB229		
SAMPLE IDENTIFICATION	Removal	DASB225-0507	DASB226-0507	DASB227-0507	DASB228-0305	DASB229-0305	DASB229-0305-AVG	DASB229-0305-D	
SAMPLE DATE	Action	20130411	20130411	20130411	20130411	20130411	20130411	20130412	
TOP DEPTH, FEET BGS	Objective	5	5	5	3	3	3	3	
BOTTOM DEPTH, FEET BGS		7	7	7	-	5	5	5	
NOTES		,	'	,				J	
	<u> </u>		<u> </u>	<u></u>	<u> </u>	<u> </u>			
METALS (MG/KG)			:	;	; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	i	i i	, ;	
ARSENIC	7.6	2.6	4.2	5.9	5.1	6.1	5.85	5.6	
LEAD	400	31	35	72	6.9	6.5	6.8	7.1	
POLYCYCLIC AROMATIC HYDROCARBONS (M	G/KG)	a year		:	***************************************	***************************************			
BAP EQUIVALENT	2	0.090	0.43	0.25	0.021	0.014	0.014	0.019 U	
2-METHYLNAPHTHALENE	NC	0.021 U	0.11 U	0.013 J	0.019 U	0.018 U	0.0185 U	0.019 U	
ACENAPHTHENE	NC	0.19	0.15	0.034	0.019 U	0.018 U	0.0185 U	0.019 U	
ACENAPHTHYLENE	NC	0.0061 J	0.11 U	0.012 J	0.019 U	0.018 U	0.0185 U	0.019 U	
ANTHRACENE	NC	0.037	0.32	0.064 J	0.019 U	0.018 U	0.0185 U	0.019 U	
BENZO(A)ANTHRACENE	NC	0.067	0.41	0.21 J	0.0036 J	0.0038 J	0.0038 J	0.019 U	
BENZO(A)PYRENE	NC	0.066	0.3	0.18	0.019 U	0.0034 J	0.0034 J	0.019 U	
BENZO(B)FLUORANTHENE	NC	0.071	0.34	0.22 J	0.0032 J	0.0038 J	0.0038 J	0.019 U	
BENZO(G,H,I)PERYLENE	NC	0.034	0.16	0.084	0.0036 J	0.0042 J	0.0043	0.0044 J	
BENZO(K)FLUORANTHENE	NC	0.037	0.17	0.12	0.019 U	0.018 U	0.0185 U	0.019 U	
CHRYSENE	NC	0.063	0.35	0.19 J	0.0052 J	0.018 U	0.0185 U	0.019 U	
DIBENZO(A,H)ANTHRACENE	NC	0.007 J	0.038 J	0.019 J	0.019 U	0.018 U	0.0185 U	0.019 U	
FLUORANTHENE	NC	0.13	0.98	0.33 J	0.0068 J	0.0061 J	0.0061 J	0.019 U	
FLUORENE	NC	0.068	0.11 J	0.051	0.019 U	0.018 U	0.0185 U	0.019 U	
INDENO(1,2,3-CD)PYRENE	NC	0.032	0.14	0.082	0.019 U	0.018 U	0.0185 U	0.019 U	
NAPHTHALENE	NC	0.018 J	0.04 J	0.016 J	0.019 U	0.018 U	0.0185 U	0.019 U	
PHENANTHRENE	NC	0.09	0.5	0.23 J	0.0052 J	0.0053 J	0.0053 J	0.019 U	
PYRENE	NC	0.15	0.97	0.4 J	0.008 J	0.008 J	0.008 J	0.019 U	

Shaded cell indicates concentration greater than Removal Action (BGS - Below ground surface.
D - Duplicate sample.
J - Estimated concentration.

MG/KG - Milligrams per kilogram. NA - Not analyzed.

NC - No criterion (Removal Action Objective).
U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT **USCG ATWATER FACILITY** DETROIT, MICHIGAN PAGE 6 OF 9

LOCATION		DASB230		DASB231		DASB232	DASB233	DASB234
SAMPLE IDENTIFICATION	Removal	DASB230-0305	DASB231-0305	DASB231-0305-AVG	DASB231-0305-D	DASB232-0305	DASB233-0305	DASB234-0305
SAMPLE DATE	Action	20130411	20130411	20130411	20130412	20130412	20130412	20130412
TOP DEPTH, FEET BGS	Objective	3	3	3	3	3	3	3
BOTTOM DEPTH, FEET BGS		5	5	5	5	5	5	5
NOTES		_				•		PROPERTY LINE
METALS (MG/KG)	•	į		1	1			;
ARSENIC	7.6	4.3	5.1	5.05	5	6.1	5.8	6.6
LEAD	400	6.9	7.5	8.35	9.2	7	16	220
POLYCYCLIC AROMATIC HYDROCARBONS (M	G/KG)	**	;	YAAVIII .	1		1	20.00
BAP EQUIVALENT	2	0.02 U	0.021	0.018	0.014	0.021	0.024	7.9
2-METHYLNAPHTHALENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02 U	0.12 J
ACENAPHTHENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02 U	0.26 J
ACENAPHTHYLENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02 U	0.16 J
ANTHRACENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02 U	0.81
BENZO(A)ANTHRACENE	NC	0.02 U	0.019 U	0.004 J	0.004 J	0.019 U	0.011 J	5.9
BENZO(A)PYRENE	NC	0.02 U	0.019 U	0.0028 J	0.0028 J	0.019 U	0.011 J	5.7
BENZO(B)FLUORANTHENE	NC	0.02 U	0.0023 J	0.00235	0.0024 J	0.0024 J	0.0097 J	6.6
BENZO(G,H,I)PERYLENE	NC	0.0028 J	0.0034 J	0.0039	0.00 44 J	0.0051 J	0.0081 J	2.8
BENZO(K)FLUORANTHENE	NC	0.02 U	0.019 U	0.0028 J	0.0028 J	0.019 U	0.0077 J	3.6
CHRYSENE	NC	0.02 U	0.0045 J	0.00485	0.0052 J	0.019 U	0.014 J	5.8
DIBENZO(A,H)ANTHRACENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02 U	0.66
FLUORANTHENE	NC	0.02 U	0.019 U	0.006 J	0.006 J	0.019 U	0.015 J	5
FLUORENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02 U	0.35
INDENO(1,2,3-CD)PYRENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.0041 J	2.7
NAPHTHALENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.02 U_	0.24 J
PHENANTHRENE	NC	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.011 J	2.4
PYRENE	NC	0.02 U	0.0 <u>057</u> J	0.00705	0.0084 J	0.019 U	0.018 J	9.2

Shaded cell indicates concentration greater than Removal Action (

BGS - Below ground surface.

D - Duplicate sample.

J - Estimated concentration.

MG/KG - Milligrams per kilogram.

NA - Not analyzed.

NC - No criterion (Removal Action Objective).

U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT **USCG ATWATER FACILITY** DETROIT, MICHIGAN PAGE 7 OF 9

LOCATION SAMPLE IDENTIFICATION SAMPLE DATE	Removal Action	DASB235 DASB235-0305 20130412	DASB236 DASB236-0305 20130412	DASB237 DASB237-0305 20130412	DASB238 DASB238-0305 20130409	DASB239 DASB239-0305 20130409	DASB240 DASB240-0305 20130409
TOP DEPTH, FEET BGS	Objective	3	3	3	3	3	3
BOTTOM DEPTH, FEET BGS		5	5	5	5	5	5
NOTES		PROPERTY LINE			PROPERTY LINE	PROPERTY LINE	
METALS (MG/KG)	. :		;	:	-		
ARSENIC	7.6	38	4.9	2.5	4.5	5.5	7.2
LEAD	400	1800	26	31	56	13	120
POLYCYCLIC AROMATIC HYDROCARBONS (M	G/KG)	· ·	<u>:</u>	2	***		:
BAP EQUIVALENT	2	2.1	0.15	0.016	0.18	0.018	1.9
2-METHYLNAPHTHALENE	NC	0.23 U	0.02 U	0.021 U	0.02 UJ	0.02 UJ	0.2 UJ
ACENAPHTHENE	NC	0.11 J	0.015 J	0.021 U	0.011 J	0.07 J	0.13 J
ACENAPHTHYLENE	NC	0.092 J	0.02 U	0.021 U	0.007 J	0.02 UJ	0.083 J
ANTHRACENE	NC	0.46	0.037	0.021 U	0.015 J	0.02 UJ	0.53 J
BENZO(A)ANTHRACENE	NC	1.5	0.11	0.0058 J	0.11 J	0.0062 J	1.6 J
BENZO(A)PYRENE	NC	1.3	0.1	0.0037 J	0.13 J	0.0066 J	1.4 J
BENZO(B)FLUORANTHENE	NC	1.8	0.11	0.0058 J	0.12 J	0.0046 J	1.5 J
BENZO(G,H,I)PERYLENE	NC	0.87	0.057	0.0025 J	0.088 J	0.0029 J	0.65 J
BENZO(K)FLUORANTHENE	NC	_ 1	0.081	0.0025 J	0.083 J	0.0046 J	0.76 J
CHRYSENE	NC NC	1.4	0.11	0.0049 J	0.1 J	0.0066 J	1.6 J
DIBENZO(A,H)ANTHRACENE	NC NC	0.42	0.019 J	0.021 U	0.02 J	0.02 UJ	0.15 J
FLUORANTHENE	NC	2.7	0.21	0.0099 J	0.13 J	0.01 J	2.9 J
FLUORENE	NC	0.12 J	0.011 J	0.021 U	0.0065 J	0.02 UJ	0.15 J
INDENO(1,2,3-CD)PYRENE	NC	0.82	0.049	0.021 U	0.076 J	0.0033 J	0.61 J
NAPHTHALENE	NC	0.23 U	0.02 U	0.021 U	0.02 UJ	0.02 UJ	0.2 UJ
PHENANTHRENE	NC	1.7	0.12	0.0074 J	0.066 J	0.0091 J	1.6 J
PYRENE	NC	2.5	0.22	0.01 J	0.19 J	0.012 J	2.9 J

Shaded cell indicates concentration greater than Removal Action (

BGS - Below ground surface.

D - Duplicate sample.

J - Estimated concentration.

MG/KG - Milligrams per kilogram.

NA - Not analyzed.

NC - No criterion (Removal Action Objective).
U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT USCG ATWATER FACILITY **DETROIT, MICHIGAN** PAGE 8 OF 9

LOCATION		DASB241			DASB242	DASB243	DASB244	DASB245
SAMPLE IDENTIFICATION	Removal	DASB241-0305	DASB241-0305-AVG	DASB241-0305-D	DASB242-0305	DASB243-0305	DASS244-0002	DASS245-0002
SAMPLE DATE	Action	20130409	20130409	20130409	20130409	20130409	20130417	20130417
TOP DEPTH, FEET BGS	Objective	3	3	3	3	3	0	0
BOTTOM DEPTH, FEET BGS		5		5	5		2	. 2
NOTES		J		J		EXCAVATED	PIER WALL	PIER WALL
	l <u>.</u>				ļ	EXCAVAILED	PIER WALL	PIEK WALL
METALS (MG/KG)		· · · · · · · · · · · · · · · · · · ·	<u> </u>			<u>.</u> , , , , , , , , , , , , , , , , , , ,		
ARSENIC	7.6	7.7	7.85	8	7	6.2	6.3	9.4
LEAD	400	320	295	270	18	38	430	620
POLYCYCLIC AROMATIC HYDROCARBONS (M	G/KG)	·		<u>.</u>	2.00		-	
BAP EQUIVALENT	2	1.5	1.0	0.51	0.022	5.7	0.38	0.71
2-METHYLNAPHTHALENE	NC	0.21 UJ	0.02 J	0.02 J	0.51 J	0.41 UJ	0.38 U	0.2 U
ACENAPHTHENE	NC	0.23 J	0.1475	0.065 J	0.018 J	0.85 J	0.38 ∪	0.084 J
ACENAPHTHYLENE	NC	0.21 UJ	0.023 J	0.023 J	0.02 UJ	0.41 UJ	0.38 U	0.2 U
ANTHRACENE	NC	0.57 J	0.365	0.16 J	0.031 J	2.4 J	0.38 U	0.2 J
BENZO(A)ANTHRACENE	NC	1.3 J	0.93	0.56 J	0.033 J	4.5 J	0.15 J	0.51 J
BENZO(A)PYRENE	NC	1.1 J	0.72	0.34 J	0.013 J	4.2 J	0.14 J	0.47 J
BENZO(B)FLUORANTHENE	NC	1.2 J	0.835	0.47 J	0.023 J	4 J	0.17 J	0.59 J
BENZO(G,H,I)PERYLENE	NC	0.57 J	0.385	0.2 J	0.011 J	2.6 J	0.083 J	0.14 J
BENZO(K)FLUORANTHENE	NC	0.64 J	0.435	0.23 J	0.016 J	2.2 J	0.11 J	0.29
CHRYSENE	NC NC	1.3 J	0.845	0.39 J	0.033 J	4.5 J	0.15 J	0.39
DIBENZO(A,H)ANTHRACENE	NC	0.11 J	0.077	0.044 J	0.0028 J	0.42 J	0.38 U	0.2 U
FLUORANTHENE	· NC	2.3 J	1.52	0.74 J	0.098 J	8.7 J	0.26 J	1 J
FLUORENE	NC	0.26 J	0.173	0.086 J	0.027 J	0.68 J	0.38 U	0.1 J
INDENO(1,2,3-CD)PYRENE	NC	0.55 J	0.36	0.17 J	0.0073 J	2 J	0.38 U	0.22 J
NAPHTHALENE	NC	0.21 UJ	0.017 J	0.017 J	0.75 J	0.41 UJ	0.38 U	0.2 U
PHENANTHRENE	NC	2.1 J	1.39	0.68 J	0.1 J	6.9 J	0.11 J	0.83 J
PYRENE	NC	3 J	1.925	0.85 J	0.1 J	11 J	0.22 J	0.78 J

Shaded cell indicates concentration greater than Removal Action (BGS - Below ground surface.

D - Duplicate sample.

J - Estimated concentration.
MG/KG - Milligrams per kilogram.
NA - Not analyzed.

NC - No criterion (Removal Action Objective).
U - Below detection limit at detection limit shown.

CONFIRMATION SAMPLE LABORATORY ANALYTICAL RESULTS REMOVAL ACTION COMPLETION REPORT **USCG ATWATER FACILITY DETROIT, MICHIGAN** PAGE 9 OF 9

LOCATION DASB246 DASBCF								
SAMPLE IDENTIFICATION	Removal	DASS246-0002	DASB-CF-01	DASB-CF-02	DASB-CF-03	DASB-CF-04		
SAMPLE DATE	Action	20130417	20130417	20130417	20130419	20130423		
TOP DEPTH, FEET BGS	Objective	0	NA	NA	NA	NA		
BOTTOM DEPTH, FEET BGS		. 2	NA	NA	NA NA	NA		
NOTES			FILL	FILL	FILL	FILL - TOPSOIL		
METALS (MG/KG)			i					
ARSENIC	7.6	5.6	3.3	3.6	3.3	3.2		
LEAD	400	52	3.4	3.6	3.3	12		
POLYCYCLIC AROMATIC HYDROCARBONS (M	IG/KG)	* · · · · · · · · · · · · · · · · · · ·	1		1	1		
BAP EQUIVALENT	2	0.24	NA	NA	NA	0.13		
2-METHYLNAPHTHALENE	NC	0.2 U	NA	NA	NA	0.08 U		
ACENAPHTHENE	NC	0.2 U	NA	NA	NA	0.08 U		
ACENAPHTHYLENE	NC NC	0,2 U	NA NA	NA	NA	0.08 U		
ANTHRACENE	NC	0.2 U	NA	NA	NA	0.08 U		
BENZO(A)ANTHRACENE	NC	0.13 J	NA	NA	NA	0.067 J		
BENZO(A)PYRENE	NC	0.095 J	NA	NA	NA	0.07 J		
BENZO(B)FLUORANTHENE	NC	0.14 J	NA	NA	NA	0.099		
BENZO(G,H,I)PERYLENE	NC	0.046 J	NA	NA	NA	0.028 J		
BENZO(K)FLUORANTHENE	NC	0.079 J	NA	NA NA	NA	0.052 J		
CHRYSENE	NC	0.099]	NA	NA	NA	0.07 J		
DIBENZO(A,H)ANTHRACENE	NC	0.2 U	NA	NA	NA	0.08 U		
FLUORANTHENE	NC	0.18 J	NA NA	NA	NA	0.13		
FLUORENE	NC	0.2 U	NA	NA	NA	0.08 U		
INDENO(1,2,3-CD)PYRENE	NC	0.13 J	NA	NA	NA	0.02 J		
NAPHTHALENE	NC	0.2 <u>U</u>	NA	NA	NA	U 80.0		
PHENANTHRENE	NC	0.12 J	NA	NA	NA	0.06 J		
PYRENE	NC	0.15 J	NA	NA	NA	0.13		

Shaded cell indicates concentration greater than Removal Action (

BGS - Below ground surface.

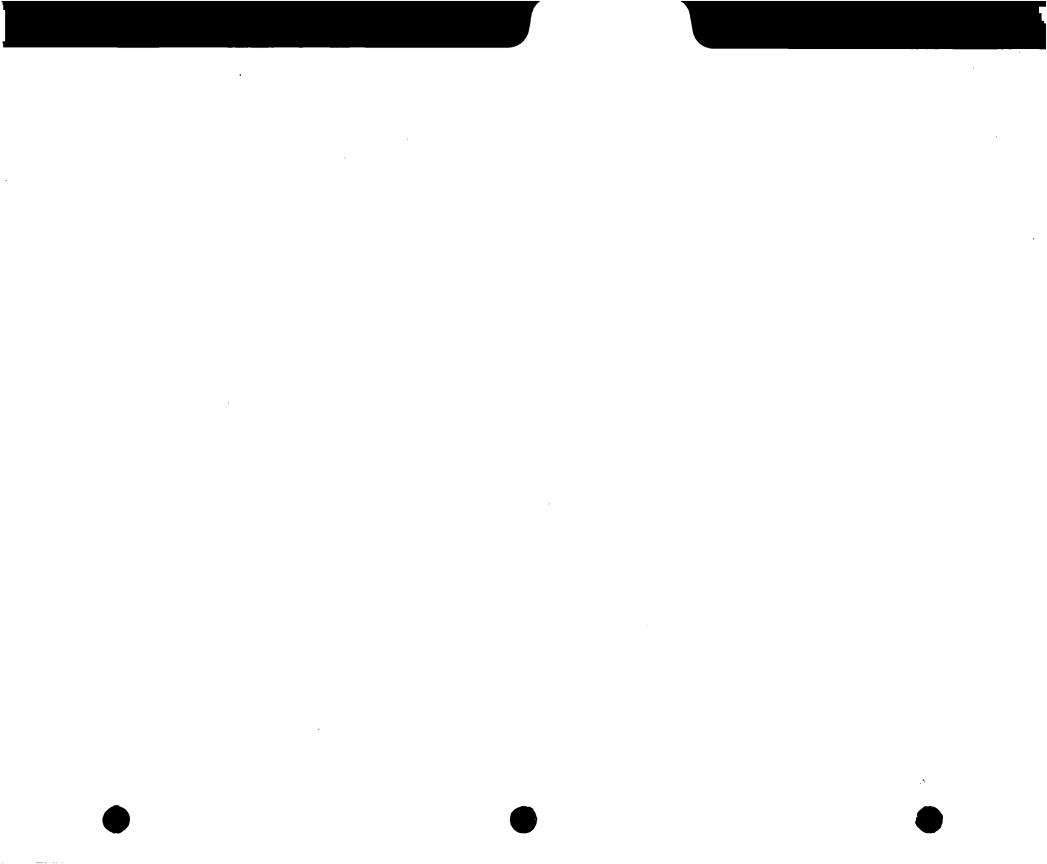
D - Duplicate sample.

J - Estimated concentration.

MG/KG - Milligrams per kilogram. NA - Not analyzed.

NC - No criterion (Removal Action Objective).

U - Below detection limit at detection limit shown.



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DRAWN BY DATE
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CHECKED BY DATE
S. HILL 09/23/11
REVISED BY DATE

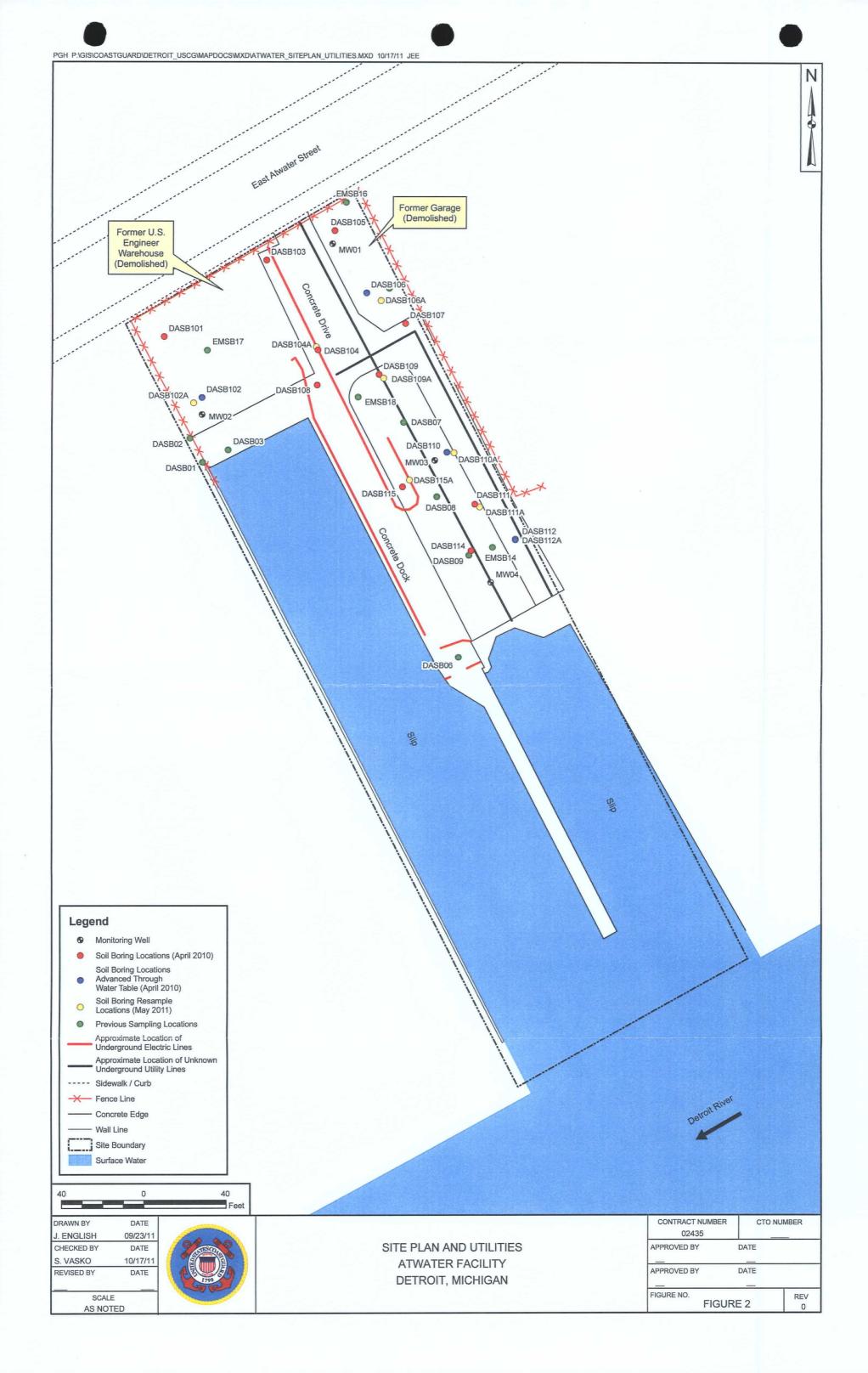
SCALE
AS NOTED

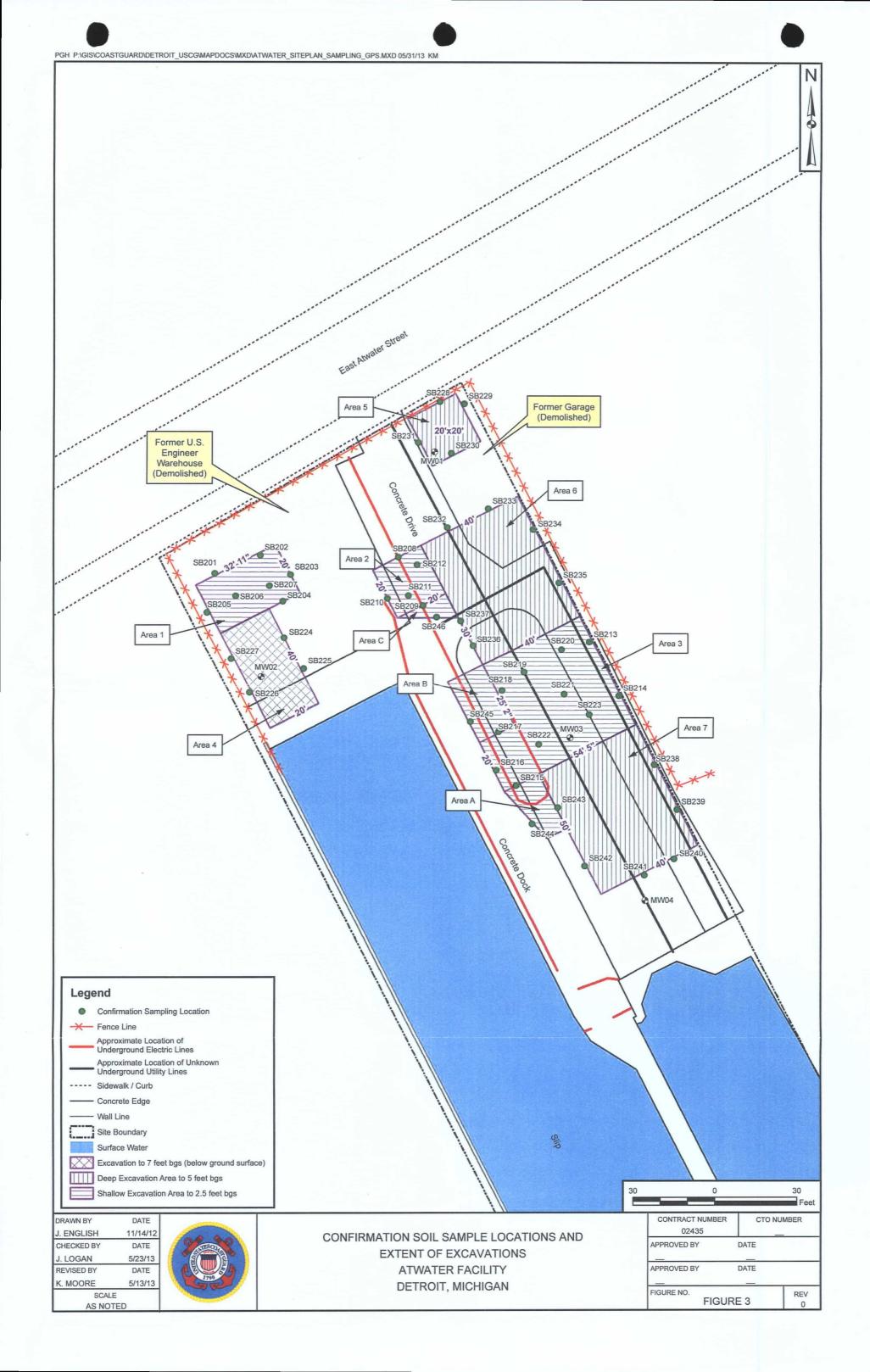
SITE LOCATION MAP ATWATER FACILITY DETROIT, MICHIGAN APPROVED BY DATE

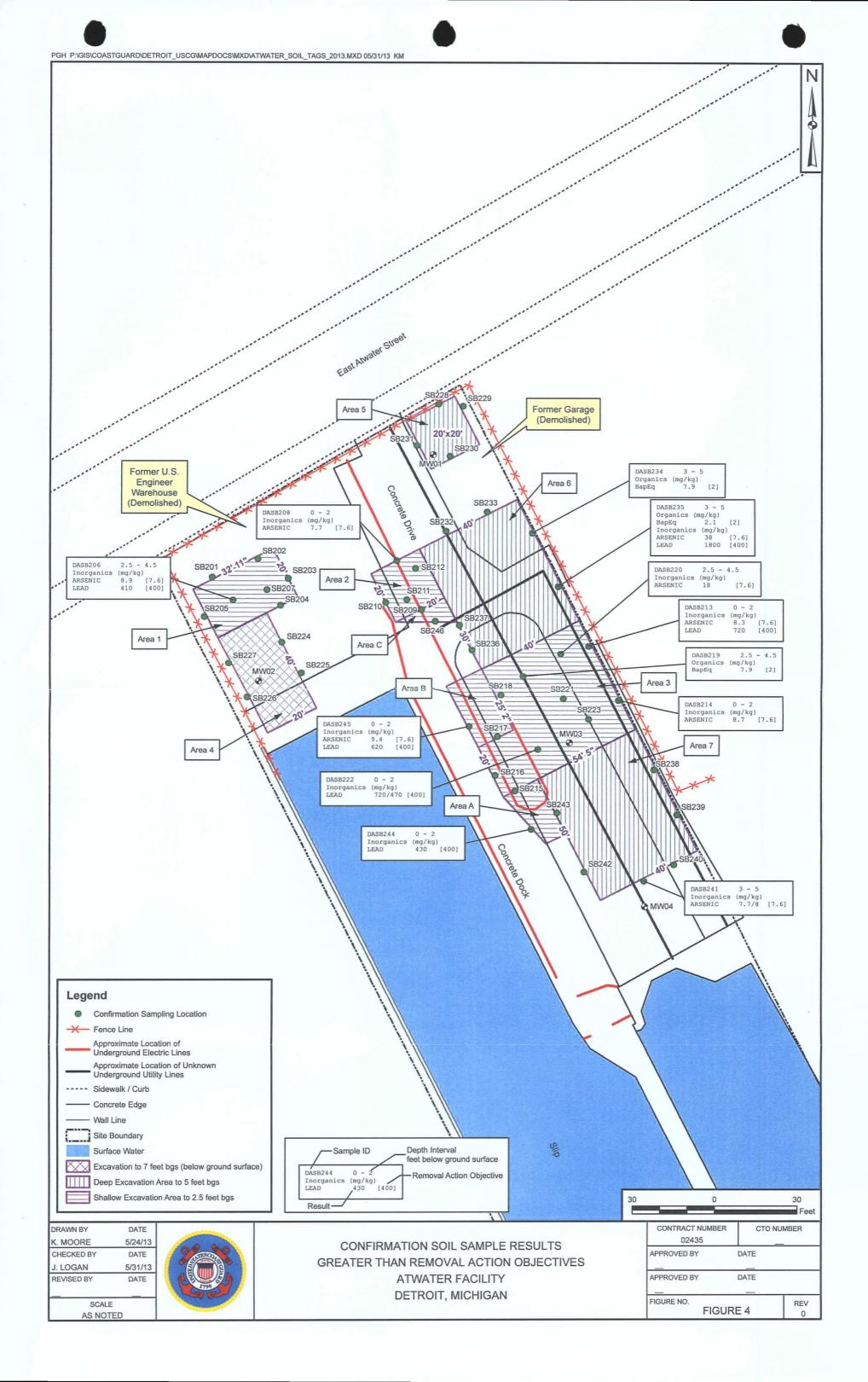
APPROVED BY DATE

FIGURE NO. REV

FIGURE 1 0



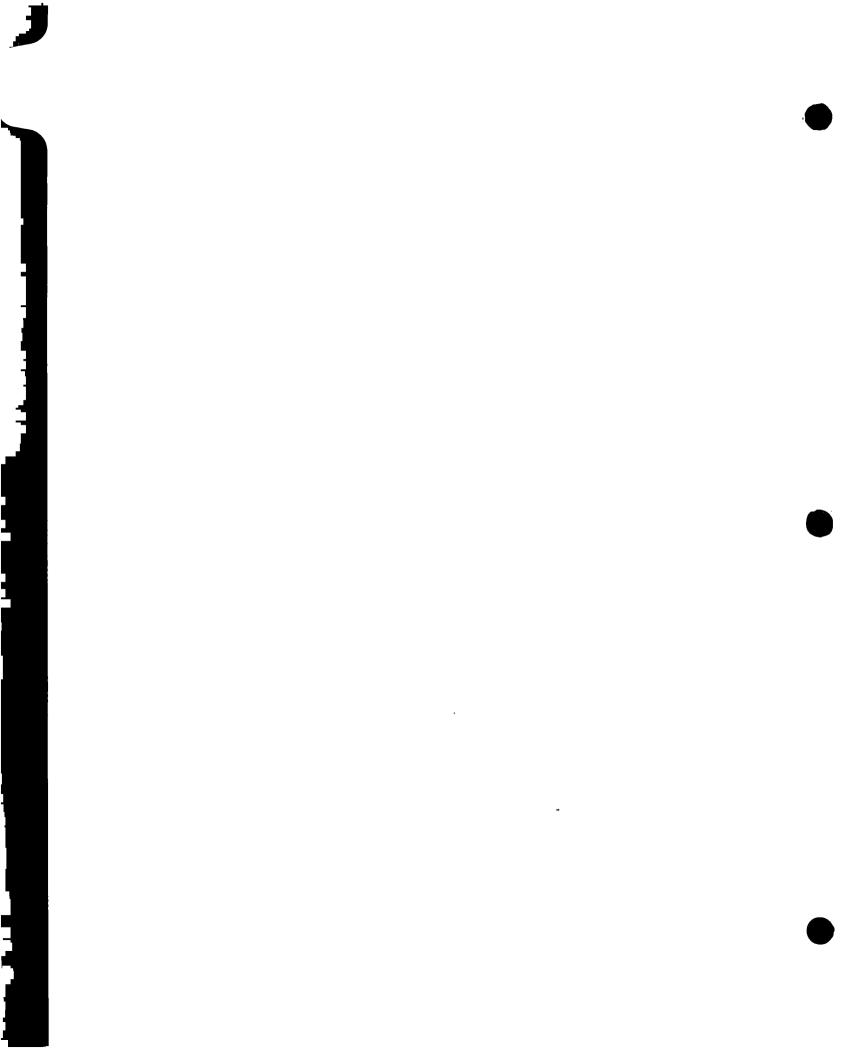




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Appendix A

Public Participation Correspondence

State of Michigan County of Macomb

Affidavit of Publication

Tetra Tech, Inc. 661 Andersen Driver Foster Plaza 7 Pittsburgh, PA 15220

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				•
		•		
•				
				
Debbie Verschueren				

Being duly sworn deposes and says that the above advertisement(s) appeared in the Detroit News and Free Press on Feb. 10-16, 2013, invoice 2318663. As an authorized employee of The Detroit Newspapers he/she knows well the facts stated herein.

Signed Delra Vershuren

Sworn and subscribed to me, a notary Public in and for Macomb County, State of Michigan.

On This 18th Day of

February

2013

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LEGAL NOTICE/ BIDS/PROPOSALS

DETROIT - Joy Preparatory Academy is accepting en-rollment applications for 2013-14, March 1-31, cracles K-2 at 1129 Cakman Bivd., grades 3-8 at 15055 Dexter Ave. If necessary, a public lottery will take place on April 19, at 12 p.m. at the Dexter iocation.

Dexter location.

INVITATION TO BID
NOTICE: Community Development institute Head Start serving Detroit Mi (CDI HS) is soliciting bids from qualified contractors for infersafety and lead abatement repairs and asbestos removal for 2 centers located in Detroit, Mi. Bids must be received by 9 a.m., on March 5, 2013 at CDI HS. 5555 Conner /3S Detroit, MI 48213 when the bids will be ubublicly opened and read. Contractors may obtain the contract documents, including conditions and bid forms from the Project Supervisor. John Stephenson 970-749-7341 or by amail beaveraree kruneyahoo.com.CDI HS reserves the right to accept or reject any or all bids. The bid may be frield by CDI HS for up to thirty days from the opening date, to investigate the qualifications of the bids receipt of federal funds.

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LEGAL NOTICE/ BIDS/PROPOSALS

Public Notice

The U. S. Coast Guard, Civil Engineering Unit Cleveland, in compilance with the Comprehensive Environmental Response, Compensation, and Liability Act, is announcing the availability of the Engineering Evaluation and Cost Analysis and the Removal Action Work Plan for the proposed soil removal action at the U.S. Coast Guard Atwater Facility on 2680 East Atwater Street in Detroit, Michigan in Wayne County.

For additional information on this proposed action, please view a copy of the U.S. Caset Guard Atwater Facility Engineering Evaluation and Cost Analysis and the Removal Action Work Plan posted at the below listed iocations from February 11 through March 13, 2013:

United States Coast Guard District 9 Public Affairs Web Site: http://www.uscg.mil/c euCleveland

Detroit Public Library -Skillman Branch 121 Gratiot Detroit, MI 48226 (313) 481-1850 Monday - Thursday: 10 AM to 6 PM Saturday: 10 AM to 6 PM

Detroit Public Library -Main Branch 5201 Woodward Ave. Detroit, Mi 48202 (313) 481-1300 Tuesday - Wednesday: Noon to 8 PM Thursday - Saturday: 10 AM to 6 PM

Interested parties should provide written comments on this proposed action no later than March 13, 2013

United States Coast Guard Civil Engineering Unit Cleveland 1240 East Ninth Street, Rm. 2179 Cleveland, Ohio 44199-2060 Attn: Mr. Gregory Carpenter, Chief of Environmental Section

If you have any questions, please contact Mr. James Cook at (216) 902-6255.

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Appendix B

Removal Waste Transportation and Disposal Documents

MDEQ EQP5150 SITE IDENTIFICATION NUMBER



STATE OF MICHIGAN

DEPARTMENT OF ENVIRONMENTAL QUALITY LANSING



DAN WYANT DIRECTOR

February 22, 2013

James Cook United States Coast Guard 1240 E 9th St Cleveland, OH 44199-2001

Dear James:

SUBJECT: Application Submitted to Obtain a Site Identification (ID) Number

This letter confirms that the Michigan Department of Environmental Quality (MDEQ) received the information you submitted on form EQP5150 to obtain a Site ID number issued under Part 111, Hazardous Waste Management, or Part 121, Liquid Industrial Waste, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

The Site ID number MIK112091844 has been issued for the site located at: 2660 E Atwater St; Detroit, MI 48207. Please note you may be contacted for additional information.

If you wish to review the information on record regarding this site you can log onto the MDEQ Web site at http://www.michigan.gov/deq. Click on WASTE, then under Featured Online Services click on Waste Data System. Enter the Site ID number in the "Quick Search" and click on "GO". This will bring up all of the information for this site under the hazardous waste or liquid industrial waste programs.

If you need to make any corrections, changes, or additions to the site data, for example, or change the site contact information; you can do so on a Site ID Form and fax, e-mail, or mail it to us. If you need to obtain a new Site ID number because the business moved to another location (Site ID number is assigned to the physical location), please go to the 'Waste Data System' as noted above and follow the instructions on the first page to print a EQP5150 Site ID form and pay on-line with a credit card. Then fax your completed Site ID form and Credit Card Receipt to 517-335-7145.

If you do not have access to the Internet you can obtain a blank copy of the form by contacting the MDEQ at 517-335-5139 and ask that a paper copy of the Site ID form EQP5150 be sent or faxed to you.

If you have any questions feel free to contact Mr. Gerry Kelly at 517-335-5139 or kellyg@michigan.gov.

Sincerely,

Jack Schinderle, Chief

Management and Tracking Unit

Hazardous Waste Section

Office of Waste Management and Radiological Protection

cc: Southeast Michigan District Office

SOIL MANIFESTS AND DISPOSAL DOCUMENTATION



GENERATOR (Gene United States Coast Guard	eration completies all of Section (I) Same
a. Generator Name:	Same b. Generating Location:
c. Address: 2660 Abwater	d. Address:
Detroit, MI 48207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name:	h. Owner's Phone No.:
MI 687 14032	8 AH5296 615 TYPE
Contaminated Soil Description of Waste	k. Quantity Units Type DP - PLASTIC DRUM
Description of Waste	OOOHO Y TR DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for transposes waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disbest treated in accordance with the requirements of 40 CFR Part 269 and is no longer a hazardous	s waste as defined by 40 CFR Part 261 or any applicable portation according to applicable regulations: AND, if the sposal Restrictions, I certify and warrant that the waste has UNITS
	I P - POUNDS
ieneratio Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section II TRAN	
TRANSPORTER I	h. Name:
. Address: OX Fox D MII	4i Address
Driver Name/Title: Book & PRINT/TYPE	j. Driver Name/Title:
. Phone No.: e. Truck No.:	k. Phone No.: I. Truck No.:
Vehicle License No./State: AC 55 9 29 M.T.	m. Vehicle License No./State:
7 (1900 M.) (1900 M.)	
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
Driver Signature Shipment Date	n
Section III	INATION
ADS ARBOR HILLS LANDFILL . Site Name:	c. Phone No.: 248-349-7230
. Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE MI 49188	
. TICKET No.:	
	and to the best of my knowledge the foregoing is true and accurate.
•	
Name of Authorized Agent Signature	. Receipt Date

SPECIAL WASTE MANIFEST

4163066

Section GENERATOR General	ator completes all of Section I)
a. Generator Name:	Same b. Generating Location:
c. Address: 2660 Atwater Detroit, MI 48207	d. Address:
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name:	h. Owner's Phone No.:
h. WASTE CODE 140328	8 AH 5 296 515 IYPE
j. Description of Waste	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous was state law, has been properly described, classified and packaged, and is in proper condition for transport weater is a treatment residue of a previously restricted hazardous waste subject to the Land Disposible treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous was	aste as defined by 40 CFR Part 261 or any applicable tation according to applicable regulations: AND, if the sal Restrictions, I certify and warrant that the waste has UNITS
Generator Authorized Agent Name Signature	T TONS Y3 - CUBIC YARDS O - OTHER
	Shipherit Date
Section II TRANSF	Outen and the second of the se
TRANSPORTER I	TRANSPORTER II
a. Name: T, K, M, S,	h. Name:
a. Name: T, K, M, S, b. Address: OXTOOL M.	i. Address:
c. Driver Name/Title: YTE DOUTING	j. Driver Name/Title:
d. Phone No.: e. Truck No.: <u> </u>	k. Phone No.: I. Truck No.:
1. Vehicle License No./State: AB 68//6 MI.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
040013	
Driver Signature Shipment Date	n, Driver Signature Shipment Date
The state of the s	NATION
a. Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE MI 48188	
e. TICKET No.:	
I hereby certify that the above named material has been accepted an	nd to the best of my knowledge the foregoing is true and accurate.
	· · · · · · · · · · · · · · · · · · ·
f. Name of Authorized Agent Signature	Receipt Date



	United States Co	ast Guard	ATOR (Generati		Same	and the same provided the same of the same same same same same same same sam
Generator Name:				b.	Generating Location:	
Address	2660 Atwater Detroit, MI 48207			d.	Address:	
Phone No.:				f.	Phone No.:	
If owner of the generatin	g facility differs from	the generator,	provide:			
Owner's Name:		 		h.	Owner's Phone No.:	
Owner's Name: WASTE CODE	MI	<u>687</u> - <u></u>	140328	<u>-</u>	AH5296 515	IYPE
Description of Waste	Contamin	ated Soil		k.	Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
state law, has been properly des waste is a treatment residue of been treated in accordance with	cribed, classified and packe f a previously restricted in the requirements of 40 CFF	aged, and is in propi exardous waste su R Part 268 and is no	er condition for transportal ubject to the Land Dispose olonger a hazardous wast	tion aca al Restr te as de	efined by 40 CFR Part 261 or any applicable cording to applicable regulations: AND, if the incitions, I certify and warrant that the waste has efined by 40 CFR Part 261.	UNITS P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER
ction.II			TRANSP	OR	(ER	
Name: TK	TRANSPORTE	RI		ţ	TRANSPORT	
			- 1	∶h.		
Address: Oy	toels M	• (•		i.	Address:	
Driver Name/Title:	1 FF May	INT/TYPE	D5	j.	Driver Name/Title:	PRINT/TYPE
Phone No.:		e. Truck No.:	026	k.	Phone No.:	_ I. Truck No.:
Vehicle License No./S	itate: <u>A C 99</u>	841 1	NI	m	. Vehicle License No./State:	
Acknowledgment of R		•			Acknowledgment of Receipt of Materi	
Driver-Signature	T.	2 4 0 Ship	ment Date	n.	Driver Signature	Shipment Date
ection (II)		44	DESTIN	ATIC	<u>ON</u>	
Site Name:A	DS ARBOR HI	LLS LANDF	ILL	с.	Phone No.: 248-349-7230	
Physical Address: 1	0690 W. SIX MIL	ERD		d.	Mailing Address: SAME	•
N	ORTHWILE.	М	12168		,	
TICKET No.:				•		
hereby certify that the	e above named m	aterial has be	en accepted and	l to t	he best of my knowledge the foregoing	is true and accurate.
1					•	



A CONTROL OF THE PROPERTY OF T	
ection GENERATOR (Gene United States Coast Guard	rator completes all of Section () Same
Generator Name:	b. Generating Location:
Address: 2660 Atwater	d. Address:
Detroit, MI 48207	<u> 경험, 회사 이 등이 생산하는 사람이 되었다. 그는 문화, 젖었</u>
Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	병원들이 아이들은 사람들이 되고 하는데 밝다
Owner's Name:	h. Owner's Phone No.:
WASTE CODE MI - 587 14032	28 AH5296 515 TYPE
Description of Waste Contaminated Soil	k Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
	00040 Y TR B BAG TR TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for transpo	
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dis- been treated in accordance with the requirements of 40 CFR Part 258 and is no longer a hazardous to	posal Restrictions, I certify and warrant that the waste has UNITS
1 Coerdt	P - POUNDS Y - YARDS T T - TONS
herator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
ection II	SFUNITAL **
. TRANSPORTER I	TRANSPORTER II
Náme: T. K. M.S.	h. Name:
Address: OXFMD M.L.	
Driver Name/Title: Prod Print/PPE	j. Driver Name/Title: PRINT/TYPE
Phone No.: e. Truck No.:	k. Phone No.:
그 그들은 그 그는 그는 것이 가장 하는 것이 되었다.	R. THOIC NO.
	Mahista Linasan Na (Otata)
Vehicle License No./State: AC 55929 MJ.	m. Vehicle License No./State:
	m. Vehicle License No./State: Acknowledgment of Receipt of Materials:
Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Driver Signature	Acknowledgment of Receipt of Materials: n
Acknowledgment of Receipt of Materials: Supplied S	Acknowledgment of Receipt of Materials:
Acknowledgment of Receipt of Materials: Super Super Date Super Date DEST	Acknowledgment of Receipt of Materials: n
Acknowledgment of Receipt of Materials: Section	Acknowledgment of Receipt of Materials: n
Acknowledgment of Receipt of Materials: Conversional Conversi	Acknowledgment of Receipt of Materials: n
Acknowledgment of Receipt of Materials: Section Section Description Descripti	Acknowledgment of Receipt of Materials: n
Acknowledgment of Receipt of Materials: Section	Acknowledgment of Receipt of Materials: n
Acknowledgment of Receipt of Materials: Section Section Description Descripti	Acknowledgment of Receipt of Materials: n
Acknowledgment of Receipt of Materials: Section Conversion Conv	Acknowledgment of Receipt of Materials: n

NON-HAZARDOUS SPECIAL WASTE MANIFEST

	ator;completes all of Section ()
United States Coast Guard a. Generator Name:	Same b. Generating Location:
c. Address: 2680 Atwater	d. Address:
Detroit, MI 48207	
e Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
j. Owner's Name:	h. Owner's Phone No.:
MI 687 148321	B AH5296 515 TYPE
Description of Waste Contaminated Soil	k Quantity Units Type DP - PLASTIC DRUM
	DD 40 Y TR DF - FIBRE DRUM B - BAG TR - TRUCK OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous v state law, has been properly described, classified and packaged, and is in proper condition for transpo	raste as defined by 40 CFR Part 261 or any applicable ritation according to applicable regulations: AND, If the
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disp been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous w	aste as defined by 40 CFR Part 261.
Jim Goorgion / >	Y -YARDS T -TONS Y3 - CUBIC YARDS
Senerator Authorized Agent Name Signature	Shipment Date O - OTHER
Section III. TRANS	PORTER:
TRANSPORTER I	TRANSPORTER II
i. Name: T. K.M.S.	h. Name:
Address: DX FueD M	i. Address:
Autres (A FOR)	i. Audiess.
Driver Name/Title: KYLE DOWN PRINTINGE	j. Driver Name/Title:
	PRINT/TYPE
i. Phone No.: e. Truck No.:	k. Phone No.: I. Truck No.:
. Vehicle License No./State: AB 68116 MI	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
Oniver Signature Shipment Date	Driver Signature Shipment Date
Section III DESTIL	NATION
.: Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
p. Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME
NORTHWILE M 49168	
. TICKET No.:	
I hereby certify that the above named material has been accepted a	nd to the best of my knowledge the foregoing is true and accurate.
·	
Name of Authorized Agent Signature	Receipt Date

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section GENERATOR (Gen	nerator completes all of Section ()
a. Generator Name:	b. Generating Location:
c. Address: 2680 Atwater	d. Address:
Detroit, MI 48207	
. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
. Owner's Name:	h. Owner's Phone No.:
WASTE CODE 1403	
Description of Waste	k. Quantity Units Type DP - PLASTIC DRUM DF - FIBRE DRUM DF - FIBRE DRUM
1 <u>일 이 10일 : 사람은 원하는 중 이 20일 중점하였다</u>	bbbHb Y FR BAG TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardor state law, has been properly described, classified and packaged, and is in proper condition for trans-	us waste as defined by 40 CFR Part 261 or any applicable apportation according to applicable regulations: AND, If the
waste is a treatment residue of a previously restricted hazardous waste subject to the Land D been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	
1, - Goe 20 00 () 3	T -TONS Y3 - CUBIC YARDS
enerator Authorized Agent Name Signature	Shipment Date O - OTHER
Section IIIa TRAN	ISPORTER
TRANSPORTER I	TRANSPORTER II
Name: Ti K. M. S.	h. Name:
Address: OXFonD MI	i. Address:
Driver Name/Title:	j. Driver Name/Title:
	PRINT/TYPE
. Phone No.: <u>0 2</u> 6	k. Phone No.: I. Truck No.:
Vehicle License No./State: AC 8984/ M.T.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
D	
Driver Signature Shipment Date	Driver Signature Shipment Date
	TINATION -
. Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
. Physical Address: 10090 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE - MI 48168	
. TICKET No.:	
	d and to the best of my knowledge the foregoing is true and accurate.
÷	
Name of Authorized Agent Signature	Receipt Date

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR (General Control of General Control of Ge	ior-completes all of Section I)
a. Generator Name:	Same b. Generating Location:
c. Address: 2660 Atwater	d. Address:
Detroit, MI 48207	
Phone No.:	f. Phone No.;
If owner of the generating facility differs from the generator, provide:	이 사고 있는 요요 그 보고 온다 이 경찰을 즐겁다.
j. Owner's Name:	h. Owner's Phone No.:
1. WASTE CODE MI _ 687 140328	AH5296 515 TYPE
. Description of WasteContaminated Soil	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
설립하면 보다 보고 있는데 보다 보고 있는데 보고 있다.	66646 Y TR TR-BAG
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport	aste as defined by 40 CFR Part 261 or any applicable
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous was	sal Restrictions, I certify and warrant that the waste has UNITS
in Goarge o-	Y - YARDS T - TONS
Generator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section III	२० हाम्बहरू
TRANSPORTER I	TRANSPORTER II
L. Name: T. K. M.S.	
D. Address: OX Fox I) / II.	i. Address:
- R L D / //	
. Driver Name/Title: Read Rundell PRINT/TYPE	j. Driver Name/Title:
I. Phone No.: e. Truck No.:	k. Phone No.: I. Truck No.:
. Vehicle License No./State: AC 55929 MT.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
A 11 1 and City Line	
Driver Signature Shipment Date	n
Section III DESTIN	ATION
ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
	ar training riddi oddi <u>ar trou</u>
NORTHVILLE, MI 48469	
. TICKET No.: hereby certify that the above named material has been accepted an	d to the best of my knowledge the foregoing is true and accurate
Name of Authorized Agent Signature	Receipt Date



Name of Authorized Agent

Signature

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163072

GENERATOR (Generator completes all of Section 1) United States Coast Guard b. Generating Location: a. Generator Name: 2660 Atwater c. Address: d. Address: _ Detroit, MI 48207 Phone No.: If owner of the generating facility differs from the generator, provide: g. Owner's Name: ____ h. Owner's Phone No.: ____ 887 140328 AH5296 h. WASTE CODE ___ DM - METAL DRUM : DP - PLASTIC DRUM DF - FIBRE DRUM Contaminated Soil k. Quantity Units Description of Waste B - BAG TR - TRUCK GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations: AND, if the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261. TONS **CUBIC YARDS** TRANSPORTER I TRANSPORTER II b. Address: Address: c. Driver Name/Title: VYIE WALLEY j. Driver Name/Title: _ d. Phone No.: e. Truck No.: 00Z k. Phone No.: f. Vehicle License No./State: AB (&116 MI. m. Vehicle License No./State: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Driver Signature Section III DESTINATION c. Phone No.: 248-349-7230 ADS ARBOR HILLS LANDFILL a. Site Name: b. Physical Address: 10690 W. SIX MILE RD d. Mailing Address: SAME MORTHWILE I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163073

	ator-completes all of Section II)
a. Generator Name:	Same b. Generating Location:
c. Address: 2660 Atwater	d. Address:
Detroit, MI 48207	
e. Phone No.:	f. Phone No.:
	1. Thore No.
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name: MI 887 14032	h. Owner's Phone No.:
n. WASTE CODE	DM - METAL DRUM
j. Description of Waste	00040 Y TR B -BRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous v	
state law, has been properly described, classified and packaged, and is in proper condition for transpo waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disp been treated in accordance with the requirements of 40 CFR Part 258 and is no longer a hazardous w	osal Restrictions, I certify and warrant that the waste has UNITS
Jim Goardt on July	Y - YARDS T - TONS
Generator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section II - TRANS	PORTER
TRANSPORTER!	TRANSPORTER II
Name: T, K, M, S,	h. Name:
D. Address: OXGMD MI.	i. Address:
c. Driver Name/Title:	j. Driver Name/Title:
	PRINT/TYPE
d. Phone No.: e. Truck No.: <u>076</u>	k. Phone No.:
. Vehicle License No./State: AC8984/ MI.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
D	
Driver Signature Shipment Date	Driver Signature Shipment Date
Section III	NATION
a. Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
b. Physical Address: 10380 W. SIX MILE RD	d. Mailing Address: SAME
Andrew State (1997) and the state of the sta	
e. TICKET No.: I hereby certify that the above named material has been accepted a	and to the best of my knowledge the foregoing is true and accurate
Name of Authorized Agent Signature	Receipt Date

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NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section I	्र United States Coast ज	ENERATOR (Gener	rator co	ompletes all of Section I)	
a. Generator Name:	Orated Digital Codes, C		b.	Same . Generating Location:	
c Address:	2660 Atwater		d.	. Address:	
· · · · · · · · · · · · · · · · · · ·	Detroit, MJ 48207		-		
e. Phone No.:			f.	Phone No.:	
If owner of the gene	rating facility differs from the ge	enerator, provide:			
g. Owner's Name: _			h.	Owner's Phone No.:	•
WASTE CODE	M I 68	7 14032	8	AH5296 515	TYPE
			—–	Ouantity Units Type DP - PU	TAL DRUM ASTIC DRUM
. Description of wa	ste		Ď	SOOKS Y FR STE	RE DRUM G
GENERATOR'S CERTIFIC	:ATION: I hereby certify that the above na	med material is not a hazerdous	waste as	o defined by 40 CFR Part 261 or any applicable	HER
waste is a treatment resid	ly described, classified and packaged, and due of a previously restricted hazardou e with the requirements of 40 CFR Part 25	us waste subject to the Land Disp	posai Res	according to applicable regulations: AND, if the strictions, I certify and warrant that the waste has defined by AD CFR Part 261.	UNITS
			**********	P -PO Y -YAI	
Senerator Authorized Agent	L Name Signal	~ PO 0.5			BIC YARDS
reversion Authorized Agent	i Name Signa		SDO D		
Section III		!) 	VEA	
And Friedman Williams	TRANSPORTER I			TRANSPORTER II	
L Name:	K.M.S.		\sqrt{h}	n. Name:	
	OXFORD MI.		- 15	. Address:	i si
. Audi 055					
	RIDI	//			
. Driver Name/Title:	Brad Pindel	PE	1	. Driver Name/Title:PRINT/TYPE	
l. Phone No.:	e. Tru	ick No.: 004	k	c. Phone No.: I. Truck I	No.:
	o./State: AC559	4		n. Vehicle License No./State:	
			"		
Acknowledgment	of Receipt of Materials:	·		Acknowledgment of Receipt of Materials:	
2 Doubles	1 thill 0	40913	n	n	
Driver Signature		Shipment Date		Driver Signature	Shipment Date
Section III	ADS ARBOR HILLS L		NAI	ION	
. Site Name:			C.	Phone No.: 248-349-7230	
. Physical Address:	10620 W. SIX MILE RE)	d.	. Mailing Address: SAME	<u> </u>
: 		MI 48168		-:	
. TICKET No.:			ar.		
	at the above named materia	Il has been accepted a	and to	the best of my knowledge the foregoing is true and	d accurate.
Name of Authorized Age	ent Si	cnature		Receipt Date	



4163075

					117772
it and	ection I		ator o	impletes all of Section I)	
a.	Generator Name:	ates Coast Guard	b.	Same Generating Location:	
C.	Address: 2860 Abv	ater	d.	Address:	
	Detroit, M		. =-		
	Share No.				
е.			f.	Phone No.:	
	If owner of the generating facility di	ffers from the generator, provide:			
g.	Owner's Name:	<u> </u>	h.	Owner's Phone No.:	<u></u> .
h.		687 14032	8	AH5296 _ 515	TYPE
j.	Description of Waste	ontaminated Soil	k.	Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
	<u> </u>		2	bbyb Y TR	B - BAG TR - TRUCK O - OTHER
	state law, has been properly described, classifi	rilly that the above named material is not a hazardous we ed and packaged, and is in proper condition for transport	rtation a	ccording to applicable regulations: AND, If the	
		restricted hazardous waste subject to the Land Disponts of 40 CFR Part 268 and is no longer a hazardous was			<u>UNITS</u> P - POUNDS
7	im Goerdy				Y - YARDS T - TONS
दें	herator Authorized Agent Name	Signature		Shipment Date	Y3 - CUBIC YARDS O - OTHER
S	ection II.	TRANS	POF	ITER (F. 1987)	
	TDANG	DODTED L		TRANSPORT	
	IHANS	PORTER I		TRANSPORT	ERII
a.	Name:		h	. Name:	· · · · · · · · · · · · · · · · · · ·
b.	Address: OxforD	M _T .	i.	Address:	
		·			· · · · · · · · · · · · · · · · · · ·
c.	Driver Name/Title: 14 1/1/2	NO 1416 A	j.	Driver Name/Title:	PRINT/TYPE
1,					
		e. Truck No.: 002	k	. Phone No.:	_ I. Truck No.:
f.	Vehicle License No./State:	B68/16 MT.	n	n. Vehicle License No./State:	4. 6.7
	Acknowledgment of Receipt of	Materials:		Acknowledgment of Receipt of Materia	als:
.•	A Page 1				
g.	Driver Signature	Shipment Date	n	Driver Signature	Shipment Date
S	ection III	DESTIN	TAP	ON:	
a.	Site Name: ADS ARE	BOR HILLS LANDFILL	C.	Phone No.: 249-349-7230	1 1
·	Physical Address: 10690 W.	SIX MILE PO	٠.		;
D.	rilysical Address. 10000 14.	STOREST INC.	u.	Mailing Address: <u>SAME</u>	
		LLE, MI 19189		<u> </u>	
е.	TICKET No.:	2	- A la -	the heat of an important and the feet	to done a small to a con-
	nereby certify that the above h	amed material has been accepted an	10 to	the best of my knowledge the foregoing	is true and accurate.
	•		•		1
f.	Name of Authorized Agent	Signature		Receipt Date]
		·		· · · · · · · · · · · · · · · · · · ·	

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Generator Name: Address: 2880 Atwater Detroit, MI 48207 Phone No.: If owner of the generating facility differs from the generator, provide: Owner's Name: WASTE CODE MI 687 140328 GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport weaste is a treatment residue of a previously restricted hazardous wester subject to the Land Disposition in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous was related in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous was related Authorized Agent Name TRANSPORTER I	k. Quantity Units Type PLASTIC DRUM DF - FIBRE DRUM B - BAG TR - TRUCK C - OTHER DM - METAL DRUM DF - FIBRE DRUM B - BAG TR - TRUCK C - OTHER UNITS
Detroit, MI 48207 Phone No.: If owner of the generating facility differs from the generator, provide: Owner's Name: WASTE CODE MI 687 140326 Description of Waste Contaminated Soil GENERATOR'S CERTIFICATION: I hereby certly that the above named material is not a hazardous waste is any, has been properly described, classified and packaged, and is in proper condition for transport waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster and the contract of the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster and the contract of the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster and the contract of the CFR Part 268 and is no longer a hazardous waster and the contract of the CFR Part 268 and is no longer a hazardous waster and the contract of the CFR Part 268 and is no longer a hazardous waster and the contract of the CFR Part 268 and is no longer a hazardous waster and the contract of the CFR Part 268 and is no longer a hazardous waster and the contract of the contract o	h. Owner's Phone No.: A H 5 2 9 6 5 1 5 IYPE C Quantity Units Type DM - METAL DRUM DP - PLASTIC DRU DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER UNITS site as defined by 40 CFR Part 261 or any applicable pation according to applicable regulations: AND, if the sal Restrictions, I certify and warrant that the waste has site as defined by 40 CFR Part 261. P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER PORTIER
Phone No.: If owner of the generating facility differs from the generator, provide: Owner's Name: WASTE CODE M.I. 6.8.7 1.4.0.3.2.6 Description of Waste Contaminated Soil GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport weste is a treatment residue of a previously restricted hazardous weste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste rationally a subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste rationally a subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste rationally a subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposon treated in accordance with the requirements of 40 CFR Part 268 and is no longer and the requirement of 40 CFR Part 268 and is no longer and the requirement of 40 CFR Part 268 and is no longer and the requirement of 40 CFR Part 268 and is no longer and the	h. Owner's Phone No.: A H 5 2 9 6 5 1 5 TYPE L. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRL DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER TRUCK O - OTHER UNITS Sal Restrictions, 1 certify and warrant that the waste has site as defined by 40 CFR Part 261. Shipment Date PORTIER PORTIER
If owner of the generating facility differs from the generator, provide: Owner's Name: WASTE CODE MI 687 140328 Description of Waste Contaminated Soil GENERATOR'S CERTIFICATION: I hereby certly that the above named material is not a hazardous waste is at treatment residue of a previously restricted hazardous waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the contamination of the contaminati	h. Owner's Phone No.: A H 5 2 9 6 5 1 5 TYPE L. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRL DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER TRUCK O - OTHER UNITS Sal Restrictions, 1 certify and warrant that the waste has site as defined by 40 CFR Part 261. Shipment Date PORTIER PORTIER
Owner's Name: WASTE CODE MI 687 140328 Description of Waste Contaminated Soil GENERATOR'S CERTIFICATION: I hereby certly that the above named material is not a hazardous waste is an treatment residue of a previously restricted hazardous waste subject to the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous wasterator Authorized Agent Name Significant TRANSPORTER TRANSPORTER	A H 5 2 9 6 5 1 5 TYPE L. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRL DF - BIBRE DRUM B - BAG TR - TRUCK O - OTHER UNITS P - POUNDS T - TONS T
WASTE CODE Contaminated Soil GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport weaste is a treatment residue of a previously restricted hazardous weaste subject to the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the content of the land Dispose to the Land Disp	A H 5 2 9 6 5 1 5 TYPE L. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRL DF - BIBRE DRUM B - BAG TR - TRUCK O - OTHER UNITS P - POUNDS T - TONS T
Description of Waste Contaminated Soil GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous wasterator Authorized Agent Name Signature Extra Name TRANSPORTER	C. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRL DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER DM - METAL DRUM DP - PLASTIC DRL DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER UNITS T - TONS T - T
Description of Waste GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport weate is a treatment residue of a previously restricted hazardous weate subject to the Land Disposes treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the condition of transport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the condition of transport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the condition of transport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the condition of transport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the condition of transport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster at the condition of the condition	R. Quantity Units Type DF - PLASTIC DRL DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER DF - PLASTIC DRL DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER UNITS P - POUNDS T - TONS T - T
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport weate is a treatment residue of a previously restricted hazardous weate subject to the Land Disposes treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous was related and a subject to the Land Disposes treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous was related Agent Name Signapare TRANSPORTER	aste as defined by 40 CFR Part 261 or any applicable atton according to applicable regulations: AND, if the sal Restrictions, I certify and warrant that the waste has site as defined by 40 CFR Part 261. O
state law, has been properly described, classified and packaged, and is in proper condition for transport waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disport been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous wasternator Authorized Agent Name Signature TRANSPORTER TRANSPORTER	este as defined by 40 CFR Part 261 or any applicable atton according to applicable regulations: AND, if the sal Restrictions, I certify and warrant that the waste has site as defined by 40 CFR Part 261. P POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER PORTIER
been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a hazardous water a first treatment of 40 CFR Part 268 and is no longer a first treatment of 40 CFR Part 268 and is no longer a first treatment of 40 CFR Part 26	P POUNDS Y YARDS T TONS Y3 - CUBIC YARDS O - OTHER PORTIER
ection: II TRANSPORTER I	PORTER Y - YARDS T - TONS T - TONS Y3 - CUBIC YARDS O - OTHER
ection:II TRANSPORTER L	Shipment Date O - OTHER PORTIER
TRANSPORTER	
	TRANSPORTER-II
Address: OXFOND MI.	i. Address:
Driver Name/Title:	j. Driver Name/Title:
PAINT/TYPE	PRINT/TYPE
Phone No.: e. Truck No.: OZ6	k. Phone No.: I. Truck No.:
Vehicle License No./State: AC 89841 MI.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
Directions	
Driver Segnature Shipment Date	n. Driver Signature Shipment
ection III DESTIN	VATION
Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
Physical Address: 10880 W. SIX MILE RO	d. Mailing Address: SAME
NORTHVILLE MI ARIER	
TICKET No.:	
I hereby certify that the above named material has been accepted an	nd to the best of my knowledge the foregoing is true and accurat



Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163077

United States Coast Guard	ator completes all of Section I)	
. Generator Name:	Same b. Generating Location:	·
Address: 2660 Atwater	d. Address:	
Detroit, MI 48207		
Phone No.:	f. Phone No.:	
If owner of the generating facility differs from the generator, provide:		
Owner's Name:	h. Owner's Phone No.:	
. WASTE CODE	AH5296 _515	IYPE
Contaminated Soil Description of Waste	k. Quantity Units Type	DF - FIBRE DRUM
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous vistate law, has been properly described, classified and packaged, and is in proper condition for transpoweste is a treatment residue of a previously restricted hazardous waste subject to the Land Dispipeen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous wasterator Authorized Agent Name Signature	nation according to applicable regulations: AND, If the sall Restrictions, I certify and warrant that the waste has sate as defined by 40 CFR Part 261.	TR - TRUCK O - OTHER UNITS P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER
		U -OTHER
Section II TRANS	PORTER	
Name: // M. 6	h. Name:	
Address: MC Clemens MT.	i. Address:	· ····································
Address: Mt Clemens Mt. Driver Name/Title: Parrie KJ Blair	j. Driver Name/Title:	
Driver Name/Title: Park J Blain		PRINT/TYPE
Priver Name/Title: Paren KJ B a i R PRINT/TYPE Phone No.:	j. Driver Name/Title:	PRINT/TYPE
Phone No.: e. Truck No.:	j. Driver Name/Title:k. Phone No.:	PRINT/TYPE I. Truck No.:
Priver Name/Title: Paren KJ Bain Phone No.: e. Truck No.: /2 Vehicle License No./State: RAZ825) MT. Acknowledgment of Receipt of Materials:	j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Mannager.	PRINT/TYPE I. Truck No.: aterials:
Phone No.:e. Truck No.: /2/	j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Mannager of Mannager of Receipt of Mannager of Manna	PRINT/TYPE I. Truck No.:
Priver Name/Title: Paren KJ Baik PRINT/TYPE Phone No.: e. Truck No.: /2/ Vehicle License No/State: RA 282 MT. Acknowledgment of Receipt of Materials: Driver Signature Section III ADS ARBOR HILLS LANDFILL	j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Macknowledgment of Receipt o	PRINT/TYPE I. Truck No.: aterials: Shipment Data
Priver Name/Title: Paren KJ Bai R PRINT/TYPE Phone No.: e. Truck No.: / Z L Vehicle License No./State: RAZ82 MT. Acknowledgment of Receipt of Materials: Driver Signisture ADS ARBOR HILLS LANDFILL Site Name:	j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Mannager of Mannager of Receipt of Mannager of Manna	PRINT/TYPE I. Truck No.: aterials:
Priver Name/Title: Paren KJ Bai R PRINT/TYPE Phone No.: e. Truck No.: / L Vehicle License No/State: RAZ82 MT. Acknowledgment of Receipt of Materials: Driver alguance Section III DESTI	j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Macknowledgment of Receipt o	PRINT/TYPE I. Truck No.: aterials: Shipment Data
Priver Name/Title: Parent No.: PRINT/TYPE Phone No.: e. Truck No.: /2/ Vehicle License No /State: RAZ825 MT. Acknowledgment of Receipt of Materials: Driver Signisture ADS ARBOR HILLS LANDFILL Site Name: Physical Address: 10890 W. SIX WILE RD	j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Macknowledgment of Receipt o	PRINT/TYPE I. Truck No.: aterials: Shipment Data

Signature

#1/3

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section GENERATOR (Ge	neratio completes all of Section I)
a. Generator Name:	b. Generating Location:
c. Address:	d. Address:
Deiroit, MI 48207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	소설하다 하는 사람들은 그들의 그들이 들었다.
g. Owner's Name: MI 887 1403	h. Owner's Phone No.: 28 AH 5 296 515
h. WASTE CODE	
Contaminated Soil j. Description of Waste	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
	ODOHO 4 TR B BAG TR - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardo	us waste as defined by 40 CFR Part 261 or any applicable
state law, has been properly described, classified and packaged, and is in proper condition for transverse is a treatment residue of a previously restricted hazardous waste subject to the Land I been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	Disposal Restrictions, I certify and warrant that the waste has UNITS When the second by 40 CED Boxt 361
Jim Goerds on J.D.	P - POUNDS Y - YARDS T - TONS
Generator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section II	
TRANSPORTER I	TRANSPORTER II
a. Name: T.K.M.S.	h. Name:
b. Address: OX Time D M.	ir Address:
- 2-12 611	
c. Driver Name/Title: Kood P. ur ACII	j. Driver Name/Title:
d. Phone No.: e. Truck No.:	k., Phone No.: I. Truck No.:
f. Vehicle License No./State: AC 55 929 M.I.	m. Vehicle License No./State:
근 사용할 수 그 회의한다. 사람 한번 가장 하는 바이를 만나게 그렇다.	
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
a Brokley of the 11 6 13	
Oriver Signature // Shipment Date	Driver Signature Shipment Date !
Section III DES	TINATION: 248-349-7230
a. Site Name:	c. Phone No.:
b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE, MI 48168	
e. TICKET No.:	d and to the best of my knowledge the foregoing is true and accurate
i hereby certify that the above named material has been accepted	and to the sest of my knowledge the foregoing is true and accurate
The second secon	



		. 9	4/7473
ction I	GENERATOR (Generate	or completes all of Section (I)	
a. Generator Name:	Guard	Same b. Generating Location:	
2880 Atwater			
c. Address: Detroit, MI 48207		d. Address:	
e. Phone No.:	· · · · · · · · · · · · · · · · · · ·	f. Phone No.:	
If owner of the generating facility differs from the	e generator, provide:		
g. Owner's Name:		h. Owner's Phone No.:	
MI 6	140328	AH5296 515	1 man
h. WASTE CODE Contaminate			IYPE DM - METAL DRUM
j. Description of Waste		k. Quantity Units Type	DP - PLASTIC DRUM DF - FIBRE DRUM B - BAG
		60040 Y TR	TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above state law, has been properly described, classified and packaged	re named material is not a hazardous was d, and is in proper condition for transportar	ste as defined by 40 CFR Part 261 or any applicable dion according to applicable regulations: AND, If the	
waste is a treatment realdue of a previously restricted haza been treated in accordance with the requirements of 40 CFR Pa			<u>UNITS</u> P - POUNDS
Jim Goerdd on			Y - YARDS T - TONS
Generator Authorized Adapt Name	griature	- Shipmen Date	Y3 - CUBIC YARDS O - OTHER
Section II	I PANAMOR		
TRANSPORTER		TRANSPORT	ΓER II
a. Name: T. K. M. S.		h. Name:	
	· •		
b. Address: OX Fire D M		i. Address:	

c. Driver Name/Title: VY(E FYZA)-JE	121	j. Driver Name/Title:	
[레마티 - 아니는 얼마나 뭐 하고요 - 뭐죠?			PRINT/TYPE
d. Phone No.: e.	Truck No.:	k. Phone No.:	_ I. Truck No.:
f. Vehicle License No./State: AC 68	116 ME.	m. Vehicle License No./State:	
Acknowledgment of Receipt of Materials:		Acknowledgment of Receipt of Mater	ials:
to the state of th			
g	OHIGHT	n	
Driver Signature	Shipment Date	Driver Signature	Shipment Date
Section III ADS ARBOR HILLS	DESTIN		
a. Site Name:		c. Phone No.: 248-349-7230	
b. Physical Address: 10890 W. SIX MILE	RD	d. Mailing Address: SAME	
NORTHVILLE	MI 49168		
	<u> </u>		
e. TICKET No.:	arial has been accorded and	d to the best of my knowledge the foregoing	s is true and accurate
mereby certify that the above harried mate	and has been accepted and	a to the best of my knowledge the loregoing	in the did divide.
	•		٦
Name of Authorized Agent	Simpahura	Bandin Date	`
Lette in Vittinickan vitalig	Signature	Receipt Date	· · · · · · · · · · · · · · · · · · ·



Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163080

ction I		nerator completes all of Section ()	100
Generator Name: _	United States Coast Guard	Same b. Generating Location:	
Address:	2680 Atwater	d. Address:	<u> </u>
	Detroit, MI 48207		
Phone No.:		f. Phone No.:	
If owner of the genera	ting facility differs from the generator, provide:		
Owner's Name:		h. Owner's Phone No.:	
WASTE CODE	MI687140	328 AH5296 516 TY	PE .
Description of Wast	Contaminated Soil	k. Quantity Units Type DM - METAL D DP - PLASTIC DF - FIBRE DI	DRUM
		DODYD Y TR B BAG	
GENERATOR'S CERTIFICAT	TON: I hereby certify that the above named material is not a hazard tescribed, classified and packaged, and is in proper condition for br	ous waste as defined by 40 CFR Part 261 or any applicable	
waste is a treatment realdu	o of a previously restricted hazardous waste subject to the Land ith the requirements of 40 CFR Part 258 and is no longer a hazard	Disposal Restrictions, I certify and warrant that the waste has	
m Goe.	12 no 161	Y - YARDS T - TONS	
erator Authorized Agent N		Shipmen Date Y3 - CUBIC Y/ O - OTHER	ARDS
	TRA	NSPORTER	Į.
SOOM II ASS	E Marie Carlo Carl		
	TRANSPORTER I	TRANSPORTER II	
Name: T.K	. M. S.	h. Name:	
Address: Ox	FORD MI.	i. Address:	<u> </u>
			÷
Driver Name/Title	I FEE ID FOR	i. Driver Name/Title:	
Jiver Name/Ime.	LETOUD ESTS	PRINT/TYPE	
Phone No.:	e. Truck No.: <u>0</u> 2 6	k. Phone No.:I. Truck No.:_	
	/State: AC 89841 MI.	m. Vehicle License No./State:	
Acknowledament of	Receipt of Materials:	Acknowledgment of Receipt of Materials:	
Õ			\top
Oriver Signature	Shipment Date	n	oment Da
ction III	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PINATION	
	ADS ARBOR HILLS LANDFILL	249, 249, 7720	
Site Name:		c. Phone No.:	
Physical Address:	10890 W. SIX MILE RD	d. Mailing Address: SAME	
	NORTHWILE MI 4846		

Signature



NON-HAZARDOUS SPECIAL WASTE MANIFEST

	11001
	erator completes all of Section !)
United States Coast Guard L. Generator Name:	Same b. Generating Location:
Address: 2660 Atwater	d. Address:
Detroit, MI 48207	
. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
. Owner's Name:	h. Owner's Phone No.:
. WASTE CODE M1 - 687 14032	8 AH5296 515 TYPE
Description of WasteContaminated Soil	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM
	ODDYD Y FR B BAG TR TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for transp	s waste as defined by 40 CFR Part 251 or any applicable
waste is a treatment realdue of a previously restricted hazardous waste subject to the Land Dis- been freated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	sposal Restrictions, I certify and warrant than the waste has
im Goerdoon 7.2	14 14 DDG
ienerator Authorized Ageli Dlame Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section II	
TRANSPORTER I	TRANSPORTER II
. Name:	h. Name:
Address: OMECO M.T.	
- <u> </u>	
Driver Name/Title: Boad Pundell	j. Driver Name/Title:
PRINT/TYPE	PRINT/TYPE
. Phone No.: e. Truck No.:	k. Phone No.: l. Truck No.:
Vehicle License No./State: AC 55 929 MT	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
A MANUELLE	
Driver Signature Shipment Date	n. Driver Signature Shipment Date
Section III DEST	INATION
. Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
. Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME
	u. Maining Address.
NORTHVILE MI 48168	
TICKET No.:	and to the heat of my knowledge the forces in the forces
nereby certify that the above named material has been accepted a	and to the best of my knowledge the foregoing is true and accurate.
Name of Authorized Agent Signature	Receipt Date



4163082

S	ection I	GENERATOR (Genera	tor co	The state of the s
a.	Generator Name:	United States Coast Guard	b.	Same Generating Location:
C.	Address:	2680 Atwater Detroit, MI 48207	d.	Address:
е.	Phone No.:		f.	Phone No.:
	If owner of the gener	ating facility differs from the generator, provide:		
-	Owner's Name:			Owner's Phone No.:
h.		M I 687 140328 Contaminated Soil		I DM - METAL DRUM
j.	Description of Was	de	k.	Quantity Units Type DP - PLASTIC DRUM DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
<i>第</i> 7	state law, has been properly waste is a treatment resid been treated in accordance	ATION: I hereby certify that the above named material is not a hazardous we described, classified and packaged, and is in proper condition for transport us of a previously restricted hazardous wasts subject to the Land Dispos with the requirements of 40 CFR Part 268 and is no longer a hazardous was a Signature Signature	ation a sai Res ste as o	occording to applicable regulations: AND, if the infictions, I certify and warrant that the waste has units defined by 40 CFR Part 261.
<u></u>	ection II	TRANSI	POR	MER
a. b.	Name:	TRANSPORTER!	i.	TRANSPORTER II Name: Address:
C.	Driver Name/Title:	KYLE DZAHAM PRINT/TYPE	j.	Driver Name/Title:
d.	Phone No.:	e. Truck No.: 002	k	Phone No.: I. Truck No.:
f.	Vehicle License No	0/State: AB 68116 MI.	n	n. Vehicle License No./State:
	Acknowledgment of	of Receipt of Materials:		Acknowledgment of Receipt of Materials:
g.	Driver Signature	O U I D I Z	п	Driver Signature Shipment Date
S	ection III	DESTIN	ATI	ON
a .	Site Name:	ADS ARBOR HILLS LANDFILL	C.	Phone No.: 248-349-7230
b,	Physical Address:	10890 W. SIX MILE RD	d.	Mailing Address: SAME
		NORTHWILE ME 48188		
е,	TICKET No.: I hereby certify that	t the above named material has been accepted an	d to	the best of my knowledge the foregoing is true and accurate.
f.	Name of Authorized Age	nt Signature		Receipt Date

46,3

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section / GENERATOR	(Generator o	ompletes all of Section (I)	
United States Coast Guard		Same . Generating Location:	
a. Generator Name:			
c. Address: 2000 Atwater Detroit, MI 48207	a	. Address:	
e. Phone No.:	f.	Phone No.:	
If owner of the generating facility differs from the generator, provide	:		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
g. Owner's Name:		. Owner's Phone No.:	
h. WASTE CODE 12	40328	AH5296 515	IYPE
j. Description of WasteContaminated Soil	k	Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a state law, has been properly described, classified and packaged, and is in proper condition waste is a treatment residue of a previously restricted hazardous waste subject to the been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a total conditions.	n for transportation le Land Disposal Re hazardous waste as	according to applicable regulations: AND, if the strictions, I certify and warrant that the waste has defined by 40 CFR Part 261.	UNITS P - POUNDS Y - YARDS
Generator Authorized Agent Name Signature)ur	Shipment Date	T - TONS Y3 - CUBIC YARDS O - OTHER
Section II	FRANSPO	RITER	
TRANSPORTER I a. Name: TK, M.S. b. Address: OxFas D MI.		TRANSPOR n. Name: Address:	
c. Driver Name/Title: PRINT/TYPE		. Driver Name/Title:	PRINT/TYPE
d. Phone No.: OZ	6	k. Phone No.:	I. Truck No.:
f. Vehicle License No./State: AC 89 841 MT.	<u>. </u>	m. Vehicle License No./State:	<u> </u>
Acknowledgment of Receipt of Materials:		Acknowledgment of Receipt of Mater	rials:
g. Driver Skjinature Shipment Date	<u>, 3</u>	N	Shipment Date
Section III	DESTINAT	10N	<u> </u>
a. Site Name: ADS ARBOR HILLS LANDFILL	c	. Phone No.: 248-349-7230	
b. Physical Address: 10890 W. SIX MILE RD		. Mailing Address: SAME	
MORTHWILE MI 4	<u>8168</u>		
e. TICKET No.:	 *	·	
I hereby certify that the above named material has been according to the control of the control	cepted and to	the best of my knowledge the foregoing	g is true and accurate.

Section	GENERATOR (Gen	erator co	impletes all of Section ()	
a. Generator Nam	United States Coast Guard ne:	b.	Same Generating Location:	
c. Address:	2660 Atwater	d.	Address:	
	Detroit, MI 48207			1
e. Phone No.:		f.	Phone No.:	
If owner of the ge	nerating facility differs from the generator, provide:			
g. Owner's Name:	·	h.	Owner's Phone No.:	· · · · · · · · · · · · · · · · · · ·
h. WASTE CODE	MI 687 1403	28_	AH5296 _ 515	IYPE
j. Description of V	VasteContaminated Seil		Quantity Units Type O O O O O O O O O O O O O O O O O O O	DM - METAL DRUM DP - PLASTIC DRUM DF - RIBRE DRUM B - BAG TR - TRUCK O - OTHER
state law, has been pro waste to a treatment n been treated in accorde	IFICATION: I hereby certify that the above named material is not a hazardou perly described, classified and packaged, and is in proper condition for transestique of a previously restricted hazardous waste subject to the Land Dance with the requirements of 40 CFR Per 268 and is no longer a hazardous perficulting the control of the cont	sportation a isposal Re	ccording to applicable regulations: AND, If the strictions, I certify and warrant that the waste has defined by 40 CFR Part 261.	P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER
	pertubarie Signature	CDAE	Shipment Date	O TOMEN
Secuolari -	ILEAN.	SFOF		
a. Name;\	TRANSPORTER I	1 .	TRANSPOR . Name:	
	7 · V - R/ 1			
c. Driver Name/Tit	de: Tarrick T. Blaire	j.	Driver Name/Title:	PRINT/TYPE
d. Phone No.:	e. Truck No.: 121	k	. Phone No.:	I. Truck No.:
Street Control of the Control	No./State: RA 28257 MI.		n. Vehicle License No./State:	
	nt of Receipt of Materials:		Acknowledgment of Receipt of Mater	rials:
g. Driver Signature	PH / B / 3 Shapment Date	п	Driver Signature	Shipment Date
Section III	20 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	INATI	ON S	
a. Site Name:	ADS ARBOR HILLS LANDFILL	· · · · · · · · · · · · · · · · · · ·	Phone No.: 248-349-7230	
b. Physical Addres	s: 10890 W. SIX MILE RD		Mailing Address: SAME	
	NORTHVILLE, MI 49169			
e. TICKET No.: I hereby certify t	that the above named material has been accepted	and to	the best of my knowledge the foregoing	g is true and accurate.
, , , , , , , , , , , , , , , , , , ,				
L				
Name of Authorized A	Agent Signature		Receipt Date	_



section []	United States Coas		ttor co	mpletes all of Section () Same	
Generator Name:			, b.	Generating Location:	
Address:	2660 Atwater		d.	Address:	·.
₩	Detroit, MI 48207	·			
Phone No.:			f.	Phone No.:	
	ating facility differs from the	**************************************	÷		
Owner's Name:			h.	Owner's Phone No.:	
WASTE CODE	MI 6	387 140328	3: 	AH5296 515	IYPE
Description of Was	Contaminate			Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
<i>*</i>			0	0030 Y TR	B - BAG TR - TRUCK
GENERATOR'S CERTIFICA	ATION: I hereby certify that the above described classified and package	ve named material is not a hazardous w	aste as	defined by 40 CFR Part 261 or any applicable cording to applicable regulations: AND, if the	O - OTHER
waste is a treatment resid been treated in accordance	ue of a previously restricted haze with the requirements of 40 CFR P	ardous waste subject to the Land Dispo art 268 and is no longer a hazardous wa	sal Res	rictions, I certify and warrant that the waste has	<u>UNITS</u> P - POUNDS
مريس ري	erdt on	Q. &		h 41 2 1 2	Y - YARDS T - TONS Y3 - CUBIC YARDS
nerator Authorized Agent	Name S	ignature	<u></u>	Shipment Date	O - OTHER
ection II		TRANS	POR	JIER)	
	TRANSPORTER	il e e e e e e e e e e e e e e e e e e e		TRANSPORT	ER II.
Name:	M. CNUR	NT.	h	Name:	
Address: M	+ Cleaners	MT.		Address:	
7.001633. <u>7 • 7</u>	1	and the second s	1 .	Tradicos.	
Driver Name/Title	Pornek J	Dain Mype		Driver Name/Title:	
			,	Divol Italia inc.	PRINT/TYPE
Phone No.:	e.	Truck No.: 12	ķ	Phone No.:	I. Truck No.:
Vehicle License No	o./State: <u>RA 78</u>	257 MZ,	IT	. Vehicle License No./State:	<u></u>
Acknowledgment of	of Receipt of Materials:			Acknowledgment of Receipt of Materi	als:
9/3	1	X41X13			
Driver Signature		Shipment Date	n	Driver Signature	Shipment Date
Section III	Villa Maria	DESTIL		Company of the Compan	
Site Name:	ADS ARBOR HILL	S LANDFILL	c.	Phone No.: 248-349-7230	
Physical Address:	10690 W. SIX MILE	RD		Mailing Address: SAME	· ·
·	MORTHWILE	M 42168			
TICKET No.:					
	t the above named mat	erial has been accepted a	nd to	the best of my knowledge the foregoing	is true and accurate.
•		T _{ab} user.	*		_
<u> </u>					
Name of Authorized Age	ent	Signature		Receipt Date	-

71/0/3

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163086 416220

S	COUNTRICATE COME GENERATOR (General	rator; completes all of Section ()	
a.	Generator Name:	b. Generating Location:	
C.	Address: Detroit MI 48287	d. Address:	
	ECBOIC, WII 40207		_
	Phone No.:	f. Phone No.:	_
. 0.			_
	If owner of the generating facility differs from the generator, provide:	h. Ownerin Phone No.	
	Owner's Name: WII 687 140328	h. Owner's Phone No.: AH 5 2 9 6 5 1 5 TYPE	_
h.	WASTE CODEContaminated Soil	k. Quantity Units Type DP - PLASTIC DRUM	
j.	Description of Waste	DF - FIBRE DRUM B - BAG	
."	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous w	Weste as defined by 40 CFR Part 261 or any applicable	
	state law, has been properly described, classified and packaged, and is in proper condition for transpor	ortation according to applicable regulations: AND, if the possil Restrictions, I cartify and warrant that the waste has <u>UNITS</u>	
\	been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous we		;
Ž	Signature Signature	T - TONS. Y3 - CUBIC YARDS OTHER	
	and the control of th		
	ection II.		
	TRANSPORTERI	TRANSPORTER II	
a.	Name: T.K.M.S. Address: OX Fund MI.	h. Name:	
b.	Address: OX Fund MI.	i. Address:	
	Section 2015	y Carry Company	·.
c.	Driver Name/Title: Brad Print/PPE	j. Driver Name/Title:	
	, and the second se	PRINT/TYPE	::
d.	Phone No.: e. Truck No.:	k. Phone No.: 1. Truck No.:	<u></u>
f.	Vehicle License No /State: AC 55 929 MT.	m. Vehicle License No./State:	-
	Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:	· 1.
_	Bandle 1 Hell 04/10/3		-
y. 	Driver Signature Shipment Date	Driver Signature Shipment Data	
<u>S</u>	ection IIII DESTIL	INATION 248-349-7230	. Ž
a.	Site Name:	c. Phone No.:	_
b.	10690 W. SIX MILE RD Physical Address:	d. Mailing Address SAME	• •
	NORTHVILLE, MI. 48168	and the control of th	
e	TICKET No.:		
	I hereby certify that the above named material has been accepted ar	and to the best of my knowledge the foregoing is true and accurate	à.
			1

Signature



4163087

- ction	GENERATOR General	rator.completes all of Section ()):	10
United State	s-Coas Guard	Same.	
a. Generator Name:		b Generating Location:	
na Address? Detroit MU	The state of the s	Address:	<u> </u>
e. Phone No.		f. Phone No.:	
If owner of the generating facility differ	rs from the generator, provide:		
g. Owner's Name:: 2.	\$15.0 51.0 1.0	h. Owner's Phone No.:	
h. WASTE CODE MI	687 _ 14032	8 AH5296 615	TYPE DM - METAL DRUM
j. Description of Waste	aminated Soil	k. Quantity Units Type	DP - PLASTIC DRUM DF - FIBRE DRUM
		DODYD Y TR	B - BAG TR - TRUCK O - OTHER
state law, has been properly described, classified a	and packaged, and is in proper condition for transpo	waste as defined by 40 CFR Part 261 or any applicable ortation according to applicable regulations: AND, if the	
been treated in accordance with the requirements	of 40 CFR Part 268 and is no longer a hazardous v	osal Restrictions, I certify and warrant that the waste has waste by 40 CFR Part 261.	UNITS P - POUNDS Y - YARDS
3 16, 300 mil		2 2 2	. T - TONS Y3 - CUBIC YARDS
Generator Authorized Agent-Name	Signature 5		O -OTHER
Section II	TIRANS	SPORTER	
TRANSPO	ORTER I	TRANSPORT	ERII
a. Name: F. K. M.S.		n. Name:	
b. Address: Oxfins	MI.	i. Address:	
c. Driver Name/Title: <u>VY/15</u> 1)	CONTIN	j.: Driver Name/Title:	
o. Divol (all rest lines.	PRINT/TYPE		PRINT/TYPE
d. Phone No.:	e. Truck No.: <u>00</u> 2	k. Phone No.:	I. Truck No.:
f. Vehicle License No./State: A.13	68116 MI.	m. Vehicle License No./State:	
Acknowledgment of Receipt of Ma	aterials:	Acknowledgment of Receipt of Materia	ıls:
400	5		
G. Driver Signature	Shipment Date	Driver Signature	Shipment Date
Section III		NATION	
a. Site Name: ADS ARBOT	RHILLSLANDFILL	c. Phone No.: 249-349-7230	
b. Physical Address: 10690 W. SIX	MILE RD	d. Mailing Address: SAME	
NORTHVILLE	MI 48168		
e. TICKET No.:		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	
· · · · · · · · · · · · · · · · · · ·	per les la region de la region	and to the best of my knowledge the foregoing	is true and accurate.
f			
Name of Authorized Agent	Signature	Receipt Date	

F11 13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

a. Generator Name: c. Address: 2890 Abwater Detroit, MI 48207 d. Address: Description of Waste Confamiliated Soil Description of Waste Description of Waste Confamiliated Soil Description of Waste Confamiliated Soil Description of Waste Confamiliated Soil Description and the proper operation and the sound and the proper confolion transmission waste as defined by 40 CFR Peril 261 Description and the proper operation and the prop	Section GENERATOR (G	enerator completes all of Sections)
C. Address: Detroit, MI 48207 e. Phone No.: If owner of the generating facility differs from the generator, provide: g. Owner's Name: h. WASTE CODE MI 687 14 0328 AH 5 2 9 6 5 1 5 Description of Weste Condaminated Soil Learning Control of Weste Learning Control Learning Co		
Detroit, MI 48207 e. Phone No.: If owner of the generating facility differs from the generator, provide: g. Owner's Name: h. WASTE CODE MI 687 140328 AH5296 516 WASTE CODE Condaminated Soil L. Quantity Description of Waste Condaminated Soil L. Quantity Description TRANSPORTER TRANSPORTER TRANSPORTER L. Address: L. Truck No.: TRANSPORTER J. Driver Name/Title: Rescription TRANSPORTER J. Driver Name/Title: Rescripti	2000 Abuston	
e. Phone No.: If owner of the generating facility differs from the generator, provide: g. Owner's Name: h. WaSTE CODE M I 887 140328 AH5296 515 DEP Description of Waste Condaminated Soil k. Quantity Units Type Condaminated Soil C	c. Address:	
g. Owner's Name: h. WASTE CODE MI 887 148328 J. Description of Waste Condaminated Soil Legarity Description of Waste Description of Was	e. Phone No.:	_
h. WASTE CODE Description of Waste Cuntaminated Soil Quantity Units Type Quantity Quantity Units Type Quantity Q	រុំ	
j. Description of Waste	MI 687 1403	
Description of Waste	Contaminated Soil	DM - METAL DRUM
GENERATORS CERTIFICATION: I hareby critiy that the above named material is not all hazardous wasts as defined by 40 CFR Part 31 or any applicable state law has been properly described, dashed and particular, dashed and particular	j. Description of Waste	DF - FIBRE DRUM B - BAG TR - TRUCK
TRANSPORTER I a Name: T.W.M.S. b. Address: OX Fort M.S. c. Driver Name/Title: FRENT/TYPE d. Phone No.: e. Truck No.: OZG f. Vehicle License No/State: AC SG SY M.S. Acknowledgment of Receipt of Materials: g. Driver Systems Section III a. Site Name: ADS ARBOR HILLS LANDFILL b. Physical Address: 10660 W. SIX MILE RD NORTHVILLE MI 19483 e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.	weate is a treatment residue of a previously restricted hazardous waste subject to the Land been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous treatment of 40 CFR Part 268 and is no longer a hazardous t	Disposal Restrictions, I certify and warrant that the waste has UNITS P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS OTHER
Acknowledgment of Receipt of Materials: Section III ADS ARBOR HILLS LANDFILL Destination Destination Destination Destination Destination Destination C. Phone No.: ADS ARBOR HILLS LANDFILL Destination Destination Destination C. Phone No.: ADS ARBOR HILLS LANDFILL Destination Destination C. Phone No.: ADS ARBOR HILLS LANDFILL Destination C. Phone No.: ADS ARBOR HILLS LANDFILL Destination C. Phone No.: ADS ARBOR HILLS LANDFILL Destination Destination C. Phone No.: ADS ARBOR HILLS LANDFILL Destination ADS ARBOR HILLS LANDFILL Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials	Sectional	NSPORTER
a. Site Name:	a. Name: T. W. M. S. b. Address: Ox Funt M. S. c. Driver Name/Title: PRINT/TYPE d. Phone No.: e. Truck No.: OZ6 f. Vehicle License No./State: A C. 89 SY [M] Acknowledgment of Receipt of Materials: g. Sylvania (Sylvania)	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials:
b. Physical Address: 10690 W. SIX MILE RD d. Mailing Address: SAME NORTHVILLE, MI. 49153 e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.		
e. TICKET No.: hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate. f	a. Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate. f	b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate. f	NORTHVILLE MI 4918	
I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate. f	e. TICKET No.:	
f		ad and to the best of my knowledge the foregoing is true and accurate.
	f.	

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Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163089

United States Coast Guard	Same	
Generator Name:	b. Generating Location:	
Address: 2660 Atwater	d. Address:	
Detroit, MI 48207		6
Phone No.:	f. Phone No.:	
If owner of the generating facility differs from the generator, provide:		
Owner's Name:	h. Owner's Phone No.:	engan di sebesah di se Sebesah di sebesah di s
WASTE CODE M1 697 14032	8 AH5296 515	IYPE
Description of Waste Contaminated Sail	k. Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM
	DOUD Y TR	DF - FIBRE DRUM B - BAG TR - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous		O - OTHER
state law, has been properly described, classified and packaged, and is in proper condition for trans) weaste is a treatment residue of a previously restricted hazardous waste subject to the Land Disbeen treated in accordance with the requirements of 40 CFR Part 268 and is no tonger a hazardous	osal Restrictions, I certify and warrant that the waste has	UNITS
	and an obtained by 40 of A1 at 201.	P - POUNDS Y - YARDS T - TONS
	<u>- 61101131</u>	Y3 - CUBIC YARDS
erator Authorized Agent Name Signature	Shipment Date	
ection III TIRAN	RORMER - STATE OF THE STATE OF	E. C.
ection III		R II
TRANSPORTER I	TRANSPORTE	R II
TRANSPORTER I Name: T, K. M. S.	h. Name:	RII
TRANSPORTER I	TRANSPORTE	RII
TRANSPORTER I Name: T, K. M. S. Address: Ox F. D MT.	h. Name:	RII
TRANSPORTER I Name: T, K. M. S.	h. Name: i. Address: j. Driver Name/Title:	
TRANSPORTER I Name: T, K. M. S. Address: Ox Ford D MT. Driver Name/Title: Blad Purple PRINT/TYPE	h. Name: i. Address: j. Driver Name/Title:	NT/TYPE
TRANSPORTER I Name: T, K. M. S. Address: Ox Fcra D MT. Driver Name/Title: Brad Puride PRINT/TYPE Phone No.: e. Truck No.: 004	h. Name: i. Address: j. Driver Name/Title:	NT/TYPE
TRANSPORTER I Name: T, K. M. S. Address: Ox Ford D MT. Driver Name/Title: Blad Purple PRINT/TYPE	h. Name: i. Address: j. Driver Name/Title:	NT/TYPE
TRANSPORTER I Name: T, K. M. S. Address: Ox Fcra D MT. Driver Name/Title: Brad Puride PRINT/TYPE Phone No.: e. Truck No.: 004	h. Name: i. Address: j. Driver Name/Title: k. Phone No.:	NT/IYPE . Truck No.:
TRANSPORTER I Name:	h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State:	NT/IYPE . Truck No.:
TRANSPORTER I Name:	h. Name: i. Address: j. Driver Name/Title: pri k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials n.	NT/TYPE . Truck No.:
TRANSPORTER I Name: T, K. M. S. Address: Ox Fcra D MT. Driver Name/Title: Blad Purple PRINT/TYPE Phone No.: e. Truck No.: O94 Vehicle License No./State: AC 55929 MT. Acknowledgment of Receipt of Materials: Bridger Signature Bright Addle Discount Date	h. Name: i. Address: j. Driver Name/Title: pri k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials n. Driver Signature	NT/IYPE . Truck No.:
TRANSPORTER I Name: T, K. M. S. Address: Ox Fora D MT. Driver Name/Title: Brab Purple PRINT/TYPE Phone No.: e. Truck No.: O94 Vehicle License No./State: AC. 55979 MT. Acknowledgment of Receipt of Materials: Driver Signature ADS. ARBOR HILLS LANDELL	TRANSPORTEI h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials n. Driver Signature NATION	NT/TYPE . Truck No.:
TRANSPORTER I Name: T, K. M. S. Address: Ox Fcra D MT. Driver Name/Title: Blad Purple PRINT/TYPE Phone No.: e. Truck No.: O94 Vehicle License No./State: AC 55929 MT. Acknowledgment of Receipt of Materials: Bridger Signature Bright Addle Discount Date	h. Name: i. Address: j. Driver Name/Title: pri k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials n. Driver Signature	NT/TYPE . Truck No.:
TRANSPORTER I Name: T, K. M. S. Address: Ox Fora D MT. Driver Name/Title: Brab Purple PRINT/TYPE Phone No.: e. Truck No.: O94 Vehicle License No./State: AC. 55979 MT. Acknowledgment of Receipt of Materials: Driver Signature ADS. ARBOR HILLS LANDELL	TRANSPORTEI h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials n. Driver Signature NATION	NT/TYPE . Truck No.:
TRANSPORTER I Name:	h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials n. Driver Signature NATION 248-349-7230	NT/TYPE . Truck No.:
TRANSPORTER I Name:	h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials n. Driver Signature NATION 248-349-7230	NT/TYPE . Truck No.:

Receipt Date

Signature



4163090

Section		enerator, completes all of Section I)	
a. Generator Name:	s Coast Guard	b. Generating Location:	
c. Address: 2680 Abvate	•	d. Address:	
Detroit, MI 4	8207		~
e. Phone No.:		f. Phone No.:	
If owner of the generating facility diffe	rs from the generator, provide:		
g. Owner's Name:		h. Owner's Phone No.:	
h. WASTE CODE MI -	687 140	328 AH5296 515	IMPE
	aminated Soil	k Quantity Units T	DM - METAL DRUM DP - PLASTIC DRUM
		00040 Y T	R DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
State law, has been properly described, classified	and packaged, and is in proper condition for t	dous waste as defined by 40 CFR Part 261 or any applicable ransportation according to applicable regulations: AND, if the d Disposal Restrictions, I certify and warrant that the waste has	UNITS
been treated in accordance with the requirements	of 40 CFR Part 268 and is no longer a hazar	tous waste as defined by 40 CFR Part 261.	P - POUNDS Y - YARDS
D. 12 12 000	Signature 3	04/01	T -TONS
		A STATE OF THE STA	O -OTHER
Section II	JR.	NSPORTER	
TRANSPO	ORTER I	TRANS	PORTER II
a. Name: T, K, M,	S,	h. Name:	
b. Address: Oxfon D	and the contract of the contra	i. Address:	
c. Driver Name/Title: VYLE D	PHEIM	j. Driver Name/Title:	PRINT/TYPE
	e. Truck No.: 002		I. Truck No.:
f. Vehicle License No./State:		m. Vehicle License No./State:	
Acknowledgment of Receipt of Ma	aterials:	Acknowledgment of Receipt of	Materials:
g. ////	04101	<u> </u>	
Orlyger Signature Section III	Shipment Date	Driver Signature STINATION	Shipment Date
ADS ARROI	R HILLS LANDFILL	249 240 7220	
a. Sne Name:		c. Phone No.:	
b. Physical Address: 10690 W. SIX	(MILE-KU	d. Mailing Address: SAME	
NORTHVILLE	. M 1816	<u> </u>	
e. TICKET No.:		and and to the best of our lesses and a first for	
i nereby certify that the above har	neu material nas been accept	ed and to the best of my knowledge the for	eguing is true and accurate
	". *		
Name of Authorized Agent	Signature	Receipt Da	 ie

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NON-HAZARDOUS SPECIAL WASTE MANIFEST

Description of Waste Consensus Waste C		[86 <u>]</u>				
a. Generation Name: c. Address: 2600 Abvalaer Debreit, MI 48207 d. Address: 1. Phone No.: If owner of the generating facility differs from the generator, provide: g. Owner's Name: h. Owner's Phone No.: If owner's Name: h. Owner's Phone No.: Description of Waste Confarminated Soil Description of Waste Confirminated Soil Description of Waste Confirminated Soil Description of Waste Confirminated Soil TYPE Description of Waste Confirminated Soil Description of Waste Confirminated Soil TYPE Description of Waste Confirminated Soil Description of Waste Confirminated Soil TYPE Description of Waste Description of Waste Description of Waste Description of Waste TYPE Description of Waste Description of Waste TYPE Description of Waste Description of Waste Description of Waste TYPE Description of Waste TYPE Description of Waste Description of Waste TYPE	section)			itor/completes all of Section		
Detroit, 6tl 48207 Phone No.: It owner of the generating facility differs from the generator, provide: It owner of the generating facility differs from the generator, provide: It owner's Name: It owner's Name: It owner's Name: Description of Waste Contaminated Soil Cont	. Generator Name:_		· 	b. Generating Locat		
B. Phone No.: If pwiner of the generating facility differs from the generator, provide; Q. Owner's Name: NASTE CODE M. 1	. Address:			d. Address:		
Nowner's Name:		Detroit, MI 48207		4 - 1 <u>- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - </u>		
Nowner's Name: M	. Phone No.:			f. Phone No.:		
WASTE CODE M. I. 6 8 7. 1 4 0 3 2 8 AH 5 2 9 6 5 1 5 Description of Waste Contaminated Soil R. Quantity Units Type Description of Waste Description of Waste Contaminated Soil R. Quantity Units Type Description of Waste Descripti	If owner of the genera	iting facility differs from the g	enerator, provide:			
Description of Waste	. Owner's Name:			h. Owner's Phone N	o.:	
Description of Waste CISTLEARTIFICATION Name Description of Waste Description of Was	. WASTE CODE	M1 88	14032	B _ AH5290	5 _ 515	IYPE
GENERATORS CERTIFICATION: I hearby certify first the above remord magnetic is not a hearenfoor whether as defined by 40 CFR Part 261 or any specialistic section (assertined and packagod, and is in proper condition to transportation according to septicate requirement and accordance with the requirement and selected to a previously restricted hearenfoor subject to the Land Disposal Restrictions. Locally and warrant that the wash has been transfel in accordance with the requirements of 40 CFR Part 256 and 67	Description of Was	Contaminated	Soil	k. Quantity	Units Type	DP - PLASTIC DRUM
GENERATOR'S CERTIFICATION: I hearby certify that the above named material is not a hazardous waste as defined by 40 CFF Part 261 or any application statistic law, his been properly described, classified and participation. AND, if the weste is a twentiment residence of a previously restricted hazardouse waste subject to the Land Disposal Restrictions. Lose by and warrant that the waste has been resided in accordance with the respirators Authorized Agent Name Section III TRANSPORTER I TRANSPORTER I TRANSPORTER II Name: Address: Driver Name/Title: Permittive i. Address: Driver Name/Title: Premittive Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Driver Signature Destination ADS ARBOR HILLS LANDFILL NORTHWILLE MILLS LANDFILL AB168 TICKET No.:				00030	YTR	B - BAG TR - TRUCK
been resided in accordance with the requirements of 40 CFR Pert 288 and is no longer a hazardous waste as defined by 40 CFR Pert 281. P POLIVINS YVARDS TOWN TOWN TOWN TOWN TOWN TOWN TOWN TOWN	state law, has been properly	described, classified and packaged, ar	nd is in proper condition for transpor	tation according to applicable regula	tions: AND, if the	O -OIREN
TRANSPORTER TRANSPORTER	been trasted in accordance to	with the requirements of 40 CFR Part 2				P - POUNDS
Section II TRANSPORTER I TRANSPORTER I TRANSPORTER I TRANSPORTER II Name: Address: Driver Name/Title: Truck No.: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Driver Name: ACKNOWledgment of Receipt of Materials: Driver Name: Destination Destin	im book		フト	A	41/12	T -TONS
TRANSPORTER I. Name: ## M. Course Address: Mt. Cleas MI. Driver Name/Title: ** PRINT/TYPE Phone No.: Truck No.:	enerator Authorized Agent		iture		Shipment Date	
Name: H, M. Course In Name: h Name: h Name: Address: MA Clears MI. Address: J. Address: J. Address: J. Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: /Z / k. Phone No.: l. Truck No.: whicle License No./State: RA Z 8 Z S / MI. M. Vehicle License No./State: Acknowledgment of Receipt of Materials: Acknowledgment of Rec	Section II		- ITANS	PORTER		
j. Driver Name/Title: PRINT/TYPE d. Phone No.: e. Truck No.: /Z / k. Phone No.: Vehicle License No./State: RA Z8Z5	Name: //	M. Enviro	1 <u>T</u> .	h. Name:		
Acknowledgment of Receipt of Materials: Driver Signature						
Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials:	. Driver Name/Title:	Patrick J &	Sin	j. Driver Name/Title		
Vehicle License No./State: RAZSS ATT. Acknowledgment of Receipt of Materials: n		FIRMIZIT	re 17 1			
Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Diver Signature						
Diversignature Section III ADS ARBOR HILLS LANDFILL Site Name: Destination C. Phone No.: ADS ARBOR HILLS LANDFILL C. Phone No.: ADS ARBOR HILLS LANDFILL C. Phone No.: ADS ARBOR HILLS LANDFILL C. Phone No.: ABS ARBOR HILLS LANDFILL ABS ARBOR HILLS LANDFILL C. Phone No.: ABS ARBOR HILLS LANDFILL ABS ARBOR HILLS LANDFILL C. Phone No.: ABS ARBOR HILLS LANDFILL ABS ARBOR HILLS LANDFILL C. Phone No.: ABS ARBOR HILLS LANDFILL ABS ARBOR HILLS LAND	Vehicle License No	./State: KA ZX ZS	1 MI.	m. Vehicle License	No./State:	
DESTINATION 1	Acknowledgment o	f Receipt of Materials:		Acknowledgmen	t of Receipt of Materia	als:
DESTINATION 1	THE		41013	n	<u></u>	
ADS ARBOR HILLS LANDFILL c. Phone No.: 248-349-7230 d. Mailing Address: SAME NORTHVILLE MI 48168 TICKET No.:						Shipment Date
a. Site Name:		ADS ARROR HILLS				
NORTHVILLE IMI 48188	. Site Name:		ANOPIEL	c. Phone No.: 248	-349-7230	Ni ji
. TICKET No.:	. Physical Address:	10690 W. SIX MILE RE	<u>)</u>	d. Mailing Address:	SAME	<u> </u>
		NORTHVILLE	M 48168			
	. TICKET No.:				4	
	I hereby certify that	the above named materia	al has been accepted a	nd to the best of my kno	wledge the foregoing	is true and accurate.
y						7
Name of Authorized Agent Signature Receipt Date	·		· · · · · · · · · · · · · · · · · · ·]



4163092

Cokrazza

		777
Section GENERATOR (Gar United States Coast Guard	nerator completes all of Section I)	
a. Generator Name:	Same b. Generating Location:	
c. Address: 2660 Atwater	d. Address:	
Detroit, MI 48207		
313 Ed.	6 Dhan Na	
e. Phone No.:	f. Phone No.:	
If owner of the generating facility differs from the generator, provide:		
g. Owner's Name:	h. Owner's Phone No.:	
h. WASTE CODE	28 AH5296 515	IYPE DM - METAL DRUM
j. Description of Waste Contaminated Soil	k. Quantity Units Type	DP - PLASTIC DRUM DF - FIBRE DRUM
	DOOSD Y TR	B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardor state law, has been properly described, classified and packaged, and is in proper condition for tran	encreation according to applicable regulations: AND, If the	
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Deen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	Jisposal Restrictions, I certify and warrant that the waste has is waste as defined by 40 CFR Part 261.	P - POUNDS
Jun Coerdoon	MY 1 1 1 2	Y - YARDS T - TONS Y3 - CUBIC YARDS
Generator Authorized Agent Name Signature	Shipment Date	O - OTHER
Section II	ISPORTER	
TRANSPORTER	TRANSPORT	rep II
	h. Name:	
a. Name: Louis		3
b. Address: Poutiac MI.	1. Address:	
		
c. Driver Name/Title: PRINT/TYPE	j. Driver Name/Title:	PRINT/TYPE
d. Phone No.: e. Truck No.: 572	k. Phone No.:	
	-	_ I. ITUCK NO
f. Vehicle License No./State: AC ZZZ55 MT	m. Vehicle License No./State:	
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Mater	ials:
a Prof 74/1/12] n	
Driver Signature Shipment Date	Driver Signature	Shipment Date
The second secon	TINATION	
a. Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230	The second
b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME	
MORTHWILE MI 48168		
e. TICKET No.:		
I hereby certify that the above named material has been accepted	- d and to the best of my knowledge the foregoing	is true and accurate
		-
f		water the state of
Name of Authorized Agent Signature	Receipt Date	

411-13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163093

	rator completes all of Section ()	
United States Coast Guard Generator Name:	Same b. Generating Location:	
Address: 2660 Atwater	· · · · · · · · · · · · · · · · · · ·	
Detroit; MI 48207	d. Address:	
Phone No.:	f. Phone No.:	*
	i. Chois No.	
If owner of the generating facility differs from the generator, provide:		
Owner's Name:	h. Owner's Phone No.:	
WASTE CODE	- AN3290 515	TYPE DM - METAL DRUM
Description of WasteContaminated Soil	k. Quantity Units Type	DP - PLASTIC DRUM DF - FIBRE DRUM 8 - BAG TR - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous	waste as defined by 40 CFR Part 261 or any applicable	O - OTHER
state law, has been properly described, classified and packaged, and is in proper condition for transp waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dis been treated in accordance with the requirements of 40 CFR Part 288 and is no longer a hazardous to	posal Restrictions, I certify and warrant that the waste has	LINITS
	•	P POUNDS Y YARDS T -TONS
nerator Authorized Agent Name Signature	Shipment Date	T -TONS Y3 - CUBIC YARDS O - OTHER
ection II		
TRANSPORTER I	TRANSPO	RTER II
Name: Lou's	h. Name:	
Address: PonTiAc MI	1	
Driver Name/Title:	j. Driver Name/Title:	
11W41/1116		
Phone No.: e. Truck No.: <u>\$4\$</u>	k. Phone No.:	
Vehicle License No./State: ACZZZGI MT	m. Vehicle License No./State:	<u> </u>
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Ma	terials:
A DA C		TTTTT
Driver Signature Shipment Date	Π. Driver Signature	Shipment Date
ection III	INATION	
Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230	
Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME	
		·
TICKET No.:hereby certify that the above named material has been accepted a	and to the best of my knowledge the foresco	ing is true and accurate
morely coming that the above harried material has been accepted a		my is use and accorde.
į · · · ·	المراز	
Name of Authorized Agent Signature	Receipt Date	

1/3

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

ction I		ator completes all of Section I)	
Generator Name:	United States Coast Guard	b. Generating Location:	
Address:	2680 Atwater	d. Address:	
Address	Detrait, MI 49207		
Phone No.:		f. Phone No.:	
If owner of the gene	erating facility differs from the generator, provide:		
Owner's Name:		h. Owner's Phone No.:	
WASTE CODE_	MI 687 14032	8 AH5296 515	IYPE DM - METAL DRUM
Description of Wa	ste Contaminated Soil	k. Quantity Units Type	DP PLASTIC DRUM DF - FIBRE DRUM B - BAG TH - TRUCK O - OTHER
state law, has been prope waste is a treatment res been treated in accordance	CATION: I hereby certify that the above named material is not a hazardous rig described, classified and packaged, and is in proper condition for transplatue of a previously restricted hazardous waste subject to the Land Dispersion with the requirements of 40 CFR Part 268 and is no longer a hazardous to the land Dispersion of the Land Dispersi	rosal Restrictions, I certify and warrant that the waste has veste as defined by 40 CFR Part 261.	P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER
nerator Authorized Age	nt Name Signature TRANS	SPORTER M	
alikaning saak arts, markinaal Madadak (1923-1926)	TRANSPORTER I	TRANSPOR	
and the second s	00/3		
Address:	Postiac M.I.	i. Address:	
Driver Name/Title	: piniel Millelland	j. Driver Name/Title:	PAINT/TYPE
Phone No.:	e. Truck No.: 127	k. Phone No.:	I. Truck No.:
	No./State: AB 93399 MI	m. Vehicle License No./State:	
	t of Receipt of Materials:	Acknowledgment of Receipt of Mate	erials:
	14/1/23 Shipment Date	Ti. Driver Signature	Shipment Det
Driver Signature		INATION	
Section III	ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230	
Site Name:	s: 10690 W. SIX MILE RD	d. Mailing Address: SAME	
Physical Addres	NORTHVILLE M. 19189		

a. Generator Name: C. Address:	SPECIAL WASTE MANIFEST	
Address	GENERATOR (Generator/Completes all of Section))	4163
About	Completes all 15	671
The state of the s	b. Go.	6319
e. Phone No.:	Totaling Location	
II OWIG	d. Address:	
g. Owner's Name: h. WASTE CODE		
g. Owner's Name:	Mary 1. Dh	
h. WASTE CODE MI	Phone No.:	
j. Description of Way		
1 asie	148328 h. Owner's Phone No.	
GENERATE SOIL	140328 h. Owner's Phone No.:	
State law, has been process in a season process in a	13296 515	
been treated in accordance of a previous and past the above named	Quantity	1
waste is a treatment residue of a previously restricted and packaged, and is in positive managed in accordance with the requirements of 40 CFR Part 268 and is Generator Authorized Agent Name Section	A H 5 2 9 6 5 1 5 K. Quantity Units Type Material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable a subject to the Land Disposal pashindons, I certify and warrant that the waste has 1 to longer a hazardous waste as defined by 40 CFR Part 261 or any applicable a subject to the Land Disposal pashindons, I certify and warrant that the waste has	DM MET
Generator Authorized Agent Game Section June	subject to the Land Dispersion according	DM METAL DRUM DP PLASTIC DRUM B BAG TR TEI
Section Section	a nazardous waste as deficad in certify and engulations; Aur.	B BAG DRUM
Signature	39 40 CFR Pen 261. If the waste has	OTHER
		LINUTS
a. Name: LOUS	TRANSPORTER Shipment Date	YAPPOOS
LOU'S ONIERI	Shipment Date 73	- CONS
b. Address: Pontial		CUBIC YARDS OTHER
Portine MT		
C. Driver A.	h. Name: TRANSPORTER II	
c. Driver Name/Title:	Address:	
d. Phone No.:		
1. Vahin		
f. Vehicle License No /State: AC 77 CT 37	j. Driver Name/Title:	
Acknowledgment of Receipt		
Acknowledgment of Receipt of Materials:	Thone No.:	
Britis Styruture	m. Vehicle I i.	
ection.III	m. Vehicle License No./State: I. Truck No.:	
	Acknowledgment of Po	
Site Name: AOS ADD	Acknowledgment of Receipt of Materials:	
Site Name: ADS ARBOR HILLS LANDFILL Physical Address: 10890 W. SIX MILE RD	Oriver Signature STRINATION	
AUDITESS: 10080 W SIV.	MARION	
SIA MILE RD	C. Ph.	_111
	C. Phone No.: 248-349-7230	if Date
reby certify that the	d. Mailing Address: SAME	
that the above named	SAME	
material has been		
Authorized	d. Malling Address: SAME and to the best of my knowledge the foregoing is true and accurate.	
Agen	west of my knowledge w	• • • • • • • • • • • • • • • • • • •
Signatura	the foregoing is true	
	we and accurate	
	Receipt Date	

#51-13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section(i) Generator completes all of Section(i) a. Generator Name: b. Generating Location: 2680 Atwater d. Address:	TO SHOW THE PROPERTY OF THE PR
2880 Atwater	<u> </u>
c. Address:	
Detroit, MI 48207	
e. Phone No.:	
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name: h. Owner's Phone No.:	
MI 887 140328 AH5296 515	IYPE
i Description of Waste Dr. F.	METAL DRUM PLASTIC DRUM
DO OBE Y TK I	FIBRE DRUM BAG FRUCK DTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations: AND, if the	SINEN
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste haz	<u>UNITS</u> POUNDS
	/ARDS
	CUBIC YARDS OTHER
Section III	
TRANSPORTER II	
a. Name: Lou's	
b. Address: i. Address:	
C. Driver Name/Title: KOX/A/1 C 5/27 11/1 J. Driver Name/Title: PRINT/TYPE	E
d. Phone No.: e. Truck No.: 924 k. Phone No.:	k No.:
f. Vehicle License No./State: AC17792 MT m. Vehicle License No./State:	
Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials:	
VENTORICOGITICAL OF DECEMBER OF MARKETINES	
o Rom Smiths 64/1/3 1	
g. Priver Signature In. Driver Signature	Shipment Date
g. Complete Signature Shipment Date DESTINATION	Shipment Date
g. Combined Shipment Date Section III ADS ARBOR HILLS LANDFILL a. Site Name: C. Phone No.:	Shipment Dute
g. Company Section III Driver Signature Destribution ADS ARBOR HILLS LANDFILL 248-349-7230	Shipment Date
g. Combon Shipment Date Section III ADS ARBOR HILLS LANDFILL a. Site Name: C. Phone No.:	Shipment Dute
g. Complete Signature Shipment Date DESTINATION Section III DESTINATION ADS ARBOR HILLS LANDFILL 248-349-7230 a. Site Name: C. Phone No.: b. Physical Address: d. Mailing Address SAME NORTHVILLE, M. 48168	Shipment Dute
g. Shipment Date Section III ADS ARBOR HILLS LANDFILL a. Site Name: b. Physical Address: NORTHVILLE, MI. 48168	
g. Section III ADS ARBOR HILLS LANDFILL a. Site Name: b. Physical Address: NORTHVILLE, MI. 48168 e. TICKET No.:	
9. Priver Signature Section III ADS ARBOR HILLS LANDFILL a. Site Name: b. Physical Address: NORTHVILLE, MI. 48168 e. TICKET No.:	

4-11-13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

	CONTRACTOR OF A CONTRACTOR AND A CONTRAC	A (Generator co	mpletes all of Section I)	
Generator Name	United States Coast Guard	b.	Same Generating Location:	
Address:	2660 Atwater		Address:	
7.00.000	Detroit, MI 48207		Address.	
Phone No.:			Phone No.:	
	erating facility differs from the generator, provide	e:		
Owner's Name:		h.	Owner's Phone No.:	
WASTE CODE	MI 687 1	40328	AH5296 615	IYPE
Description of Wa	Contaminated Soil	 	Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM
Description of vva	3316	<u> </u>	0030 9 FR	DF - FIBRE DRUM B - BAG TR - TRUCK
state law, has been prope	CATION: I hereby certify that the above named material is not a rly described, classified and packaged, and is in proper condition	on for transportation as	cording to applicable regulations: AND, If the	O -OTHER
waste is a treatment rea been treated in accordance	idue of a previously restricted hazardous waste subject to the with the requirements of 40 CFR Part 268 and is no longer a	he Land Disposal Res hazardous waste as d	trictions, I certify and warrant that the waste has lefined by 40 CFR Part 261.	<u>UNITS</u> P - POUNDS
im Gos	12100	5		Y -YARDS T -TONS
erator Authorized Agei	nt Name Signature		Shipment Date	Y3 - CUBIC YARDS O - OTHER
ction II		TOANCOOD		
Name:	TRANSPORTER I	h.	TRANSPORT	ER II
	2000年 ~ 600 - 2010 -	h.		ERII
Address: Pr	ou's MI.	h. i.	Name: Address: Driver Name/Title:	
Address: Pr	CUTING MI.	i.	Name: Address: Driver Name/Title:	PRINT/TYPE
Address: Pr Driver Name/Title Phone No.: (24) Vehicle License N	STEVE SHEFFELD / DRIVER PRINT/YPE 8)732-SKRT e. Truck No.: 83	i.	Name: Address: Driver Name/Title: Phone No.:	PRINT/TYPE 1. Truck No.:
Address: Pr Driver Name/Title Phone No.: (24) Vehicle License N	STEVE SHEFFELD DRIVER PRINT/TYPE 2) 732 - SCATE e. Truck No.: 83	i.	Name: Address: Driver Name/Title: Phone No.: . Vehicle License No./State:	PRINT/TYPE 1. Truck No.:
Address: Pr Driver Name/Title Phone No.: (24) Vehicle License N	2003 TIME SHEETELD DRIVER PRINT/TYPE 8) 732 - SCAT e. Truck No.: 83 No./State: AA46747 M	i.	Name: Address: Driver Name/Title: Phone No.:	PRINT/TYPE 1. Truck No.:
Address: Properties Priver Name/Title Phone No.: (24) Vehicle License N	2003 TIME SHEETELD DRIVER PRINT/TYPE 8) 732 - SCAT e. Truck No.: 83 No./State: AA46747 M	i. j. T. ""	Name: Address: Driver Name/Title: Phone No.: Vehicle License No./State: Acknowledgment of Receipt of Materia	PRINT/TYPE 1. Truck No.:
Address: Properties Phone No.: (24) Vehicle License No.: (24) Acknowledgment	STEVE SHEETELD / DRIVER PRINT/TYPE 8) 732 - SCAT e. Truck No.: 83 No / State: A 4 4 7 4 7 M of Receipt of Materials: C 4 1 1 Shipment Date	i. j. j. T. m	Name: Address: Driver Name/Title: Phone No.: Vehicle License No./State: Acknowledgment of Receipt of Materia	PRINT/TYPE 1. Truck No.:
Address: Property of the Phone No.: (24) Vehicle License No.: (24) Acknowledgment Driver Signature Ction IIII	STEVE SHEETELD / DRIVER PRINT/TYPE 8) 732 - SCAT e. Truck No.: 83 No / State: A 4 4 7 4 7 M of Receipt of Materials: C 4 1 1 Shipment Date	i. j. j. j. j. j. j. j. j. j.	Name: Address: Driver Name/Title: Phone No.: Vehicle License No./State: Acknowledgment of Receipt of Materia	PRINT/TYPE 1. Truck No.:
Address: Property of the Phone No.: (24) Vehicle License No.: (24) Acknowledgment Driver Signature Sction III	STEVE SHEEFELD DRIVER PRINT/TYPE 8) 732 - SCAT e. Truck No.: 83 No./State: AA4/747 M of Receipt of Materials: Shipment Date	i. j. j. j. j. j. j. j. j. j.	Name: Address: Driver Name/Title: Phone No.: Vehicle License No./State: Acknowledgment of Receipt of Materia Driver Signature ON:	PRINT/TYPE 1. Truck No.:
Address: Properties Phone No.: (24) Vehicle License No.: (24) Acknowledgment Driver Signature Sction: IIII	ADS ARBOR HILLS LANDFILL 2. STEVE SHEFFELD / DRIVER PRINT/TYPE 2. 3732 SKRT e. Truck No.: 83 ADS ARBOR HILLS LANDFILL 10690 W. SIX MILE RD	i. j. j. j. p.	Name: Address: Driver Name/Title: Phone No.: Vehicle License No./State: Acknowledgment of Receipt of Materia Driver Signature ON: 248-349-7230	PRINT/TYPE 1. Truck No.:
Address:	ADS ARBOR HILLS LANDFILL 2. STEVE SHEFFELD / DRIVER PRINT/YPE 2. 2727 e. Truck No.: 83 ADS ARBOR HILLS LANDFILL 10890 W. SIX MILE RD	i. j. j. j. j. j. j. j. j. j.	Name: Address: Driver Name/Title: Phone No.: Vehicle License No./State: Acknowledgment of Receipt of Materia Driver Signature ON: 248-349-7230	PRINT/TYPE I. Truck No.: Shipment Det
Address:	ADS ARBOR HILLS LANDFILL 10690 W. SIX MILE RD NORTHVILLE MI	i. j. j. j. j. j. j. j. j. j.	Name: Address: Driver Name/Title: Phone No.: Acknowledgment of Receipt of Materia Driver Signature ON Phone No.: 248-349-7230 Mailing Address: SAME	PRINT/TYPE I. Truck No.: Shipment Date
Address:	ADS ARBOR HILLS LANDFILL 2. STEVE SHEFFELD / DRIVER PRINT/TYPE 2. 3732 SKRT e. Truck No.: 83 ADS ARBOR HILLS LANDFILL 10690 W. SIX MILE RD	i. j. j. j. j. j. j. j. j. j.	Name: Address: Driver Name/Title: Phone No.: Acknowledgment of Receipt of Materia Driver Signature ON Phone No.: 248-349-7230 Mailing Address: SAME	PRINT/TYPE I. Truck No.: Shipment Det

1-11-13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section GENERATOR (Gen	erator completes all of Section I)
a. Generator Name:	b. Generating Location:
. Address: 2000 Atwater	d. Address:
Detroit, Mt 48207	
. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
Owner's Name:	h. Owner's Phone No.:
WASTE CODE M1 687 14032	
Description of Waste Contaminated Sail	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
	DOD30 Y TR B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardou state law, has been properly described, classified and packaged, and is in proper condition for trans	is waste as defined by 40 CFR Part 261 or any applicable sportalion according to applicable regulations: AND, if the
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Di been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	eposal Restrictions, I certify and warrant that the waste has a waste as defined by 40 CFR Part 261. P - POUNDS Y - YARDS
1, m Goersh on	T - TONS Y3 - CUBIC YARDS
enerator Authorized Agent Name Signature	Shipment Date O - OTHER
Section III.	SPORTER
TRANSPORTER I	TRANSPORTER II
Name: Lous:	h. Name:
Address: Poutrac M.	i. Address:
Driver Name/Title:	j. Driver Name/Title: PRINT/TYPE
Phone No.: e. Iruck No.: 372	k. Phone No.: I. Truck No.:
Vehicle License No./State: ACZZZZ9 MI.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
1 = 1 from 041113	n
Oriver Signature Shipment Date : Section III DEST	Driver Signature Shipment Date TINATION
ADS ARBOR HILLS LANDELL	240 240 7230
Site Name:	c, Priorie No.:
Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE, MI 48158	
TICKET No.:	and to the best of my knowledge the foresting in this and accurate
i nereby certify that the above named material has been accepted	and to the best of my knowledge the foregoing is true and accurate.

481-13

NON-HAZARDOUS C SPECIAL WASTE MANIFEST

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(277575

	rator; completes all of Section I)):
a. Generator Name:	b. Generating Location:
c. Address: 2680 Atwater	d. Address:
Detroit, MI 48207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name:	h. Owner's Phone No.:
h. WASTE CODE MI - 687 14032	28 AH5296 515 TYPE
j. Description of Waste Contaminated Soil	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
	DODBO Y TR B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for transp	waste as defined by 40 CFR Part 261 or any applicable ortation according to applicable regulations: AND, if the
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disp been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous v	eraste as defined by 40 CFR Part 261. P - POUNDS
Ly no terson on	Y -YARDS T -TONS T -TONS Y3 -CUBIC YARDS
Generator Authorized Agent Blame Signature	Shipment Date O - OTHER
Section II	SPORTER
TRANSPORTER I	TRANSPORTER II
a Name:	h. Name:
	i. Address:
b. Address: Phatiac IVI	I. Address.
Ar all a z	
c. Driver Name/Title: 11 PRINT/TYPE	j. Driver Name/Title:
d. Phone No.: e. Truck No.: <u>848</u>	k. Phone No.: I. Truck No.:
f. Vehicle License No./State: Ac 72761 MI.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
g. Niver Signature Shipment Date	n. Driver Signature Shipment Dates
	NATION .
a. Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
	d. Mailing Address: <u>SAME</u>
NORTHVILLE, MI. 19169	
e. TICKET No.:	and to the best of my knowledge the foregoing is true and accurate
The second secon	and the state of t
Name of Authorized Agent Signature	Receipt Date

49 3

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163654

Section	GENERATOR	(Generator-completes;all of Section I)	
a. Generator Name:	United States Coast Guard	b. Generating Location:	4177
	2680 Atwater	d. Address:	
c. Address:	Detroit, MI 48207	u. Auuisss.	
. Phone No.:		f. Phone No.:	
If owner of the gener	ating facility differs from the generator, provide:		
. Owner's Name:		h. Owner's Phone No.:	
. WASTE CODE	MI 687 14	10328 AH5296 515	IYPE
Description of Was	te Contaminated Soil	k Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
Jym G		DODED Y TR	B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICA state law, has been properly	TION: I hereby certify that the above named material is not a har described, classified and packaged, and is in proper condition f	azardous waste as defined by 40 CFR Part 261 or any applicable for transportation according to applicable regulations: AND, if the	O TOTHER
 waste is a treatment resid. 	ue of a previously restricted hazardous waste subject to the i with the requirements of 40 CFR Part 268 and is no longer a ha	Land Disposal Restrictions, I certify and warrant that the waste has	<u>UNITS</u> P - POUNDS
in God	1210~ (2)	541113	Y - YARDS T - TONS Y3 - CUBIC YARDS
inerator Authorized Agent	Name Signature	Shipment Date	O - OTHER
ection II		RANSPORTER	
	TRANSPORTER I	TRANSPOR	TER II
Name: Lou		h. Name:	
	Portine Mit	i. Address:	
Address		The state of the s	
Driver Name/Title:	Daniel Mcelellano	j. Driver Name/Title:	
The second secon	레스트 등 등 등 등 등 경험하기 되었다. 그 그 이 사		PRINT/TYPE
Phone No.:	e. Truck No.: 12.2	k. Phone No.:	I. Truck No.:
Vehicle License No	JState: AB 93399 M1		
Acknowledgment of	of Receipt of Materials:	Acknowledgment of Receipt of Mate	rials:
A VI	00000		
Driver Signature	Shipment Date	n. Driver Signature	Shipment Date
ection III		DESTINATION	The state of the s
Site Name:	ADS ARBOR HILLS LANDFILL	c. Phone No.:	
Physical Address:	10890 W. SIX MILE RD	d. Mailing Address: SAME	
		49168	
TICKET No.:	NUNCTIVILLE. PSI.		
· · · · · · · · · · · · · · · · · · ·	t the above named material has been acce	epted and to the best of my knowledge the foregoin	g is true and accurate
Name of Authorized Age	nt Signature	Receipt Date	

如1013

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163655

CHION CONTROL	ator:completes:alliof:Section.il)
Generator Name:	b. Generating Location:
Address: 2660 Atwater	d. Address:
Detroit, Mi 46207	
Phone No.:	f. Phone No.:
owner of the generating facility differs from the generator, provide:	
Owner's Name:	h. Owner's Phone No.:
WASTE CODE 687 14032	8 AH5296 515
Contaminated Soil	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
	00030 Y TR B - BAG TR - TRUCK O - OTHER
ENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous water law, has been properly described, classified and packaged, and is in proper condition for transaste is a treatment residue of a previously restricted hazardous waste subject to the Land Displace in treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster subject to the Land Displace in treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster to the contract of the contract	ortation according to applicable regulations: AND, if the local Restrictions, I certify and warrant that the waste has vaste as defined by 40 CFR Part 261. P POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS
	Shipment Date
CTION III	SPORTIER
TRANSPORTER I	TRANSPORTER II
lame: Lou's	h. Name:
Address: Pontiac MI.	i. Address:
Oriver Name/Title: Dear The PRINT/NEE	j. Driver Name/Title:
Phone No.: e. Truck No.: 371	k. Phone No.:
ehicle License No./State: AC77531 ML.	m. Vehicle License No./State:
cknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
04/1/2	
Twe: Signature Shipment Date	Driver Signature Shipment Date
DESTI	<u>NATION:</u> 248-349-7230
Site Name:	c. Phone No.:
Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE MI. 48168	
TICKET No.:	and to the best of my knowledge the foregoing is true and accurate.
the second secon	
larne of Authorized Agent Signature	Receipt Date

4-11-13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section Generator General	itor completes all of Section!)
United States Coast Guard	Same
a. Generator Name:	b. Generating Location:
c. Address: 2680 Atwater	d. Address:
Detroit, MI 49207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name:	h. Owner's Phone No.:
h. WASTE CODE MI 687 140328	8 AH5296 515
j. Description of Waste Contaminated Soil	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM
	DD D3D Y FR B - BAG TR - TRUCK O O THER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous we state law, has been properly described, classified and packaged, and is in proper condition for transport	aste as defined by 40 CFR Part 261 or any applicable
waits is a treatment residue of a previously restricted hazardous waste subject to the Land Dispo been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous wa	isal Restrictions, I certify and warrant that the waste has <u>UNITS</u>
7/m (00, 27 or)	Y -YARDS T -TONS
Generator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section II	PORTER
	TRANSPORTER
TRANSPORTER I	TRANSPORTER II
a Name: Lous	h. Name:
b. Address: Pouting MJ	i. Address:
c. Driver Name/Title: Rolling Print TVAR	j. Driver Name/Title:
	PRINT/TYPE
d. Phone No.: e. Truck No.: <u>934</u>	k. Phone No.:
f. Vehicle License No./State: AC 17797 MI	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
g. Driver Stemature Shipment Date	n. Driver Signature Shipmant Date
Section III DESITING	VATION
a. Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
D. Physical Address. Moreo 77. DIA MacL NO	d. Mailing Address. SAVIC
NORTHVILLE, MI. 49169	
e. TICKET No.:	ad to the heat of my tennylodes the formation to the second
I hereby certify that the above named material has been accepted an	id to the best of my knowledge the foregoing is true and accurate.
f. Name of Authorized Agent Signature	Receipt Date

H12.13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163657

71x \$627373

0فري		or co	ompletes:all of Section I)
a. G	enerator Name:	b.	Same Generating Location:
c. A	ddress: 2660 Atwater	d.	Address:
	Detroit, MI 48207		
- P	hone No.:	f.	Phone No.:
lf	owner of the generating facility differs from the generator, provide:		
ı. O	wner's Name:	h.	Owner's Phone No.:
ı. W	ASTE CODE MI 687 140328	.: 	AH5296_515 TYPE
D	escription of Waste Contaminated Soil	k.	Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - RBRE DRUM
		6	Y T & B - BAG TR - TRUCK O - OTHER
str wa be	NERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous was the law, has been properly described, classified and packaged, and is in proper condition for transports site is a treatment residue of a previously restricted hazardous waste subject to the Land Dispose on treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Dispose on treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste to the Land Dispose of the Land Dispose on treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste to the Land Dispose of the Land Dispose on the Land Dispose on the Land Dispose of the Land Dispose of the Land Dispose on the Land Dispose on the Land Dispose on the Land Dispose on the Land Dispose of the Land Dispose on the Land Disp	lion a il Res	defined by 40 CFR Part 261 or any applicable according to applicable regulations: AND, if the strictions, I certify and warrant that the waste has UNITS
senen	ator Authorized Agent Name Signature	7	Shipment Date O - OTHER
Sec	tion(II) TIRANSP	OF	uer
Z N	TRANSPORTER I	h	TRANSPORTER II
). A	ddress: Pontine MT	i.	Address:
. Dı	iver Name/Title: State Swapping	j.	Driver Name/Title:
	Annual Control of the	. :	PAINT/TYPE
	e. Truck No.: 837	k	Phone No.: I. Truck No.:
Ve	hicle License No /State: AA 4(74)	п	n. Vehicle License No./State:
: Ac	knowledgment of Receipt of Materials:		Acknowledgment of Receipt of Materials:
J. <u>D</u> f	ver Signature Shipment Date	n	Driver Signature Shipment Dute
Sec	ion III. DESTIN	ATI	
	ADS ARBOR HILLS LANDFILL	C	Phone No.: 248-349-7230
	ysical Address: 10690 W. SIX MILE RD		Mailing Address: SAME
	NORTHWILLE MI 48188		
	CKET No.:		
	ereby certify that the above named material has been accepted and	to	the best of my knowledge the foregoing is true and accurate.
		•	
Nar	ne of Authorized Agent Signature		Receipt Date

Name of Authorized Agent

Signature

NON-HAZARDOUS

4163658

SPECIAL WASTE MANIFEST 61892 GENERATOR (Generator completes all of Section I) United States Coast Guard b. Generating Location: a. Generator Name: 2660 Atwater d. Address: c. Address: Detroit, MI 48207 f. Phone No.: e. Phone No.: If owner of the generating facility differs from the generator, provide: h. Owner's Phone No.: Owner's Name: AH5296 140328 WASTE CODE DM - METAL DRUM Quantity Units Type **Description of Waste** - FIBRE DRUM - BAG - OTHER GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any app GENERATION 5 CERT Introductions, through the state law, has been properly described, classified and packaged, and is in proper condition for transportation according to appropriate regulations, country and warrant that the waste has weste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has UNITS treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261. **POUNDS** CUBIC YARDS TRANSPORTER II TRANSPORTER I Driver Name/Title: c. Driver Name/Title: e. Truck No.: 5 I. Truck No.: d. Phone No.: ___ k. Phone No.: m. Vehicle License No./State: f. Vehicle License No./State: .A C Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: **Driver Signature** DESTINATION Section III * c. Phone No.: 248-349-7230 ADS ARBOR HILLS LANDFILL Site Name: Physical Address: 10890 W. SIX MILE RD d. Mailing Address: SAME NORTHVILLE. I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate

Receipt Date

#14-13 4-11-13

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section I	United States Co					
. Generator Name:			b.	Generating Location:		
. Address:	2000 Atwater Detroit, MI 4820		d.	Address:		
rdi de de 1900 — De des Se rvicos — Territor	Centr, Wi 4020					
. Phone No.:			f.	Phone No.:		
If owner of the gener	ating facility differs from	ı the generator, prov	ide:			
. Owner's Name: _			h.	Owner's Phone No.:		
. WASTE CODE	MI	687	140328	AH5296	515	IYPE
Description of Was	te <u>Contamir</u>	nated Soll	<u>k</u>	Quantity L	Inits Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
-			_	10030	Y TR	B - BAG TR - TRUCK O - OTHER
state law, has been properly	described, classified and packs	raged, and is in proper cond	dition for transportation a	defined by 40 CFR Part 261 or a coording to applicable regulations	: AND, if the	
been treated in accordance	with the requirements of 40 CFF			trictions, I certify and warrant that defined by 40 CFR Part 261.	the waste has	P - POUNDS
1,500 (Sed.)	16		ج ر در	- NY	1112	Y - YARDS T - TONS Y3 - CUBIC YARDS
ienerator Authorized Agent	Name	Signature		S	hipment Date	O -OTHER
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				
Section II			TRANSPOR	TER		
Section III			FRANSPOR	MER	TRANSPORT	
	TRANSPORTE		Control of the Contro		TRANSPORT	
. Name:	TRANSPORTE		Control of the Contro	. Name:	TRÄNSPORT	
	TRANSPORTE		Control of the Contro		TRÄNSPORT	
Name: -C	TRANSPORTE	ERI'	Control of the Contro	. Name:	TRÄNSPORT	
Name:	TRANSPORTE	ERI'	Control of the Contro	. Name:		
Name:	TRANSPORTE OU'S POUTI-AC DOVIEL MA	ERI'	j	. Name:		ER II
Name:	TRANSPORTE OU'S POUTI-AC DOVIEL MA	ERIT	- j	Name:Address:Driver Name/Title: _		ER II
Name:	TRANSPORTE OU'S POUTI-AC DAVIEL MA	ERITOR No.: 1	- j	Name: Address: Driver Name/Title: Phone No.:	/State:	ER II PRINT/TYPE I. Truck No.:
Name:	TRANSPORTE	ERIT CACILARA e. Truck No.: \\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	- j	. Name: Address: Driver Name/Title: Phone No.: 1. Vehicle License No.	/State:	ER II PRINT/TYPE I. Truck No.:
Name:	TRANSPORTE	ERITOR No.: 1		. Name: Address: Driver Name/Title: Phone No.: 1. Vehicle License No.	/State:	PRINT/TYPE I. Truck No.:als:
Name:	TRANSPORTE	ER I		Name: Address: Driver Name/Title: Phone No.: 1. Vehicle License No. Acknowledgment of	/State:	PRINT/TYPE I. Truck No.:als:
Name:	TRANSPORTE	ERITORIA AND AND AND AND AND AND AND AND AND AN	ZZ ,	Name: Address: Driver Name/Title: Phone No.: No.: Acknowledgment of Driver Signature ON 248-3	/State:	PRINT/TYPE I. Truck No.:als:
Name:	TRANSPORTE OUS POUTI-AC DAVIE MA DISTANCE ABOR HI	ERITOR TO THE STREET OF THE ST	7.7	. Name: Address: Driver Name/Title: Phone No.: No.: Acknowledgment of Driver Signature ON Phone No.: 248-3	/State: Receipt of Material 49-7230	PRINT/TYPE I. Truck No.:als:
Name:	TRANSPORTE OUTTORE DANIEL MA OUTTORE DANIEL MA OUTTORE DANIEL MA ADS ARBOR HI 10890 W. SIX MII	ER I CALLARA e. Truck No.: 133 99 s: CALLARA Shipment I ILLS LANDFILL ILE RD	7.7	Name: Address: Driver Name/Title: Phone No.: No.: Acknowledgment of Driver Signature ON 248-3	/State: Receipt of Material 49-7230	ER II PRINT/TYPE I. Truck No.:
Name:	TRANSPORTE OUS POUTI-AC DAVIE MA DISTANCE ABOR HI	ERITOR TO THE STREET OF THE ST	7.7	. Name: Address: Driver Name/Title: Phone No.: No.: Acknowledgment of Driver Signature ON Phone No.: 248-3	/State: Receipt of Material 49-7230	PRINT/TYPE I. Truck No.:als:



4163660

631947 GENERATOR (Generator completes all of Section I) Generator Name: b. Generating Location: 2660 Atwater Address: d. Address: Detroit, MI 48207 e. Phone No.: f. Phone No.: If owner of the generating facility differs from the generator, provide: g. Owner's Name: h. Owner's Phone No.: 687 AH5296 140328 515 WASTE CODE DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM Contaminated Soil k. Quantity Type Description of Waste - BAG - TRUCK - OTHER state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations: AND, waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the wi treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261. POUNDS TONS TRANSPORTER TRANSPORTER I TRANSPORTER II h. Name: b. Address: Address: c. Driver Name/Title: Driver Name/Title: e. Truck No.: _ S d. Phone No.: k. Phone No.: I. Truck No.: Vehicle License No./State: m. Vehicle License No / State: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: **Driver Signature** DESTINATION Section III ARBOR HILLS LANDFILL 248-349-7230 Site Name: c. Phone No.: b. Physical Address: 10690 W, SIX MILE RD d. Mailing Address: SAME e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate. Name of Authorized Agent

#16.13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

a. Generating Locations c. Address: Debroit, Wil 48207 d. Address: Debroit, Wil 48207 d. Address: Blowner of the generating facility differs from the generator, provide: g. Owner's Name: H. WASTE CODE MI 687 140328 AH 5296 S15 Description of Waste Conferminated Scill Description of Waste Conferminated Scill Description of Conferminated Scill		ction II. GENERATOR (Generality	or oc	mpletes all of Section!)	
c. Address:	â	Generator Name:	b.	Generating Location:	1
Detroit, MI 46207 6. Phone No.: If owner of the generating facility differs from the generator, provide: G. Owner's Name: MI 587 140328 h. Owner's Phone No.: AH 5298 315 Description of Waste Consaminated Soil Description of Waste Description of Waste Consaminated Soil Description of Waste Consaminated Soil Description of Waste Descri	C.	Address: 2660 Atweler	٠.;		
If owner of this generating facility differs from the generator, provide: g. Owner's Name: MI 987 140328		Detroit, MI 48207			
GENERATOR SCREEN AND STATE OF THE PROPERTY OF	e.	Phone No.:	f.	Phone No.:	
h. WASTE CODE Confaministed Soil Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Description of Waste Confaministed Soil R. Quantity Units Type Description of Waste Description of Waste The Address of the second soil of the doce named rational and a hazardous waste as defined by 40 CFR Part 261 or a production AND, 8 de and 8 in the second soil of the sec		If owner of the generating facility differs from the generator, provide:	-1		
h. WASTE CODE Confaministed Soil J. Description of Waste Description of Waste L. Quantity Units Type Do D 3	g.	Owner's Name: MI 687 140328	h.	Owner's Phone No.: AH 5 2 9 6 5 1 5	
Description of Waste	h.	WASTE CODEContaminated Soil			
CDEDITION CONTROL TITLE I provided the provided provided provided to the base of control and defined by 40 CPF Part 261 or any applicable was to be in the base by the provided provide	j.	Description of Waste	k	Quantity Units Type DP - P	LASTIC DRUM IBRE DRUM IAG
Section		GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous was	te as	defined by 40 CFR Part 261 or any applicable	
TRANSPORTER I TRANSPORTER I TRANSPORTER I TRANSPORTER II T		waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dispose	d Res	trictions, I certify and warrant that the waste has	
TRANSPORTER I TRANSPORTER I TRANSPORTER I TRANSPORTER II T	زک	rotorson		[]	ARDS ONS
TRANSPORTER I a. Name:	Ge	erator Authorized Agent Qame Signature			
h. Name: b. Address: c. Driver Name/Title: PRINT/TYPE d. Phone No.: e. Truck No.: 934 k. Phone No.: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: i. Truck No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: DESTINATION Section: DESTINATION 248-349-7230 c. Phone No.: b. Physical Address: NORTHVILLE, MI. 48168 e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.	<u> </u>	Chorit	OF	NER CONTRACTOR OF THE CONTRACT	
b. Address:	127	TRANSPORTER I		TRANSPORTER II	
j. Driver Name/Title: PRINT/TYPE d. Phone No.: e. Truck No.: 934 k. Phone No.: I. Truck No.: m. Vehicle License No./State: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Deby: Spiniture Spiniture Shipment Date Section: III 248-348-7230 a. Site Name: c. Phone No.: C. Phone No.: AUS ARBUR HILLS LANDFILL 248-348-7230 b. Physical Address: NORTHVILLE, MI. 48168 e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.	ā.	Name: Lous	h	. Name:	
d. Phone No.:e. Truck No.: 934 k. Phone No.:I. Truck No.: f. Vehicle License No./State:Acknowledgment of Receipt of Materials:	b.	Address: Poutine M.	i.	*Address:	
d. Phone No.:e. Truck No.: 934 k. Phone No.:I. Truck No.:					
d. Phone No.:e. Truck No.: 934 k. Phone No.:I. Truck No.:	C.	Driver Name/Title: Park + Bout + Bout + Comment + Commen	J.		
f. Vehicle License No./State: A C. 197 M.T. m. Vehicle License No./State: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Diriver Signature Section: III. ACKNowledgment of Receipt of Materials: n. Diriver Signature Shipment Date Shipmen			1.		
Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Acknowledgment of Receipt of Materials: Description D			٠.		(No.:
Destination Section: Destination AUS ARBUR HILLS LANDFILL a. Site Name: b. Physical Address: NORTHVILLE, MI. 48168 e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.	•		ıı		
Section III Driver Signature Driver Signature Shipment Date Section III DESTINATION AUS ARBUR HILL'S LANDFILL a. Site Name: b. Physical Address: NORTHVILLE, MI. 48168 e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.		Acknowledgment of necept of materials.		Acknowledgment of Receipt of Materials:	
Section III 208-349-7230 a. Site Name:	g.	Driver Signature Shipment Date	ח		Shipment Date
a. Site Name: C. Phone No.: SAME	S	100 Martin 1 100 Mar	ATT		
b. Physical Address: 10890 W. SIX MILE RD d. Mailing Address:	a.		c.		
NORTHVILLE, MI. 48168 e. TICKET No.: I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.	. :	10890 W SIX MILE RD		SAME	
I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.			era .		
I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.	e.	TICKET No.:			
Name of Authorized Agent		· · · · · · · · · · · · · · · · · · ·	l to t	the best of my knowledge the foregoing is true ar	nd accurate.
Name of Authorized Agent					
	i. ,	Name of Authorized Agent			



27.94

4163662

TN # 627374

Section I/A GENERATOR (G	enerator completes all of Section (I)
a. Generator Name:	b. Generating Location:
c Address: 2050 Alwater	d. Address:
Detroit, Wil 46207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	현장을 보고 하는 이 아들까지 하는 물론이 되어 하셨다.
g. Owner's Name: MI 687 1483	h. Owner's Phone No.:
h. WASTE CODE Contaminated Soil	328 AH 5296 515
Contaminated Soil	
j. Description of Waste	DOOLD Y TR B - BAG B - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazard	O -OTHER
state law, has been properly described, classified and packaged, and is in proper condition for tra- waste is a treatment residue of a previously restricted hazardous waste subject to the Land	ansportation according to applicable regulations: AND, If the Disposal Restrictions, I certify and warrant that the waste has UNITS
been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazards	Y - YARDS
15 mg 12 10 25 10 15 10 10 10 10 10 10 10 10 10 10 10 10 10	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
	Snipment Date
Section II TRA	NSPORTER
TRANSPORTER I	TRANSPORTER II
a. Name: Lous	h. Name:
b. Address: Pontiac MII	
b. Address: Phank Address:	i. Address:
	[18] [18] 1
c. Driver Name/Title: Sec. Sec. PRINT/TYPE	j, Driver Name/Title:
d. Phone No.: e. Truck No.: 937	k. Phone No.: 1. Truck No.:
f. Vehicle License No/State: AA 46,747	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
g. Cl Shipment Date	T1. Driver Signature Shipment Date
	TINATION
a. Site Name:	248-349-7230 c. Phone No.:
10880 W. SIX MILE RD	SAME
b. Physical Address:	d. Mailing Address:
NORTHVILLE, MI. 48168	
e. TICKET No.:	
I hereby certify that the above named material has been accepte	ad and to the best of my knowledge the foregoing is true and accurate
f. Name of Authorized Agent Signature	
Name of Authorized Agent Signature	Receint Date

HILLS

NON-HAZARDOUS SPECIAL WASTE MANIFEST

4163663

7	ction GENERATOR (Generato	completes all of Section ()
	United States Coast Guard a. Generator Name:	Same
	TORN ALL	b. Generating Location:
C.	Detroit, MI 48207	d. Address:
. , e.	. Phone No.:	f. Phone No.:
	If owner of the generating facility differs from the generator, provide:	
g.	. Owner's Name:	h. Owner's Phone No.:
h.	. WASTE CODE MI 687 140328	
i.	Contaminated Soil Description of Waste	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM
		DDD3D Y TR B BAG TR - TRUCK
	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste	O -OTHER
	state law, has been properly described, classified and packaged, and is in proper condition for transportation waste is a treatment realdue of a previously restricted hazardous waste subject to the Land Disposal been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste	Restrictions, I certify and warrant that the waste has UNITS as defined by 40 CER Part 261
۲,	in Coerds on	P - POUNDS Y - YARDS T - TONS
<i>\$</i>	enerator Authorized Agent Name	O Y / / / / / / Y3 - CUBIC YARDS Shipment Date O - OTHER
S	Section III	
	Th.	
	TRANSPORTER I	TRANSPORTER II
	Name: Lou 3	h. Name:
b.	Address: Partire MT	I. Address:
c.	Driver Name/Title: 16 1	j. Driver Name/Title:
	PRINT/TYPE	PRINT/YPE.
d.	Phone No.: e. Truck No.: 9.	k. Phone No.: I. Truck No.:
f.	Vehicle License No./State: ACZZZS9 MT.	m. Vehicle License No./State:
:. .81	Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
~	Contract Survey	
y. 	Driver Signature Shipment Date	Driver Signature Shipment Date
<u> S</u>	Section III DESTINA	IION
a.	Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-348-7230
b.	Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME
	NORTHVILLE MI 48168	
e.		
	I hereby certify that the above named material has been accepted and to	o the best of my knowledge the foregoing is true and accurate
Ī	Name of Authorized Agent Signature	Receipt Date

4163664

Section I Generator (Gen	erator completes all of Section I)
a. Generator Name:	b. Generating Location:
c. Address: 2660 Alwaler Detroit, MI 48207	d. Address:
Ustick, let 9020/	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name:	h. Owner's Phone No.:
h. WASTE CODE M1 687 1403	28 AH5296 515 TYPE
j. Description of Waste	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM
	DO030 Y TA B - BAG TR - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for transpasse is a properly described.	s waste as defined by 40 CFR Part 261 or any applicable
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dis been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	sposal Restrictions, I certify and warrant that the waste has waste as defined by 40 CFR Part 261.
Jun (pord) on	P - POUNDS Y - YARDS T - TONS
Generator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section III	SPORTIER
TRANSPORTER I	TRANSPORTER
a. Name:	TRANSPORTER II
b. Address: Poutine MI	h. Name:
	i. Address:
Driver Name/Title: Daniel Hand	j. Driver Name/Title:
하기 수도 보는 그는 사람들이 가지 않아 하는 사람들이 얼마를 보고 있다. 그렇는 것 같은 사람들이 모든	PRINT/TYPE
d. Phone No.: 122	k. Phone No.: 1. Truck No.:
. Vehicle License No./State: AC 93399	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
1 1 Mel1111 041113	
Driver Signature Shortert Date	Driver Signature Shipment Date
Section III DESTI ADS ARBOR HILLS LANDFILL	NATION 248-349-7230
L. Site Name:	c. Phone No.:
Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE, MI. 48168	
. TICKET No.:	
I hereby certify that the above named material has been accepted a	and to the best of my knowledge the foregoing is true and accurate
Name of Authorized Agent Signature	

Signature

#20 13 4-11-13

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR: (Generator Name: Address: 2660 Atwater Detroit, MI 48207	ator completes all of Section i) Same b. Generating Location:	
Address: 2080 Atwater	b. Generating Location:	ear of the attack of substitution at \$100 Acc.
Address.		
	d. Address:	
Det on, Mi 402D?		
Phone No.:	f. Phone No.:	
If owner of the generating facility differs from the generator, provide:		
Owner's Name:	h. Owner's Phone No.:	
WASTE CODE MI - 687 14032	AH5296 615	IYPE
Description of Waste Contaminated Soil	k. Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
	ODO3D Y TR	B BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste law, has been properly described, classified and packaged, and is in proper condition for transpowaste is a treatment realdure of a previously restricted hazardous waste subject to the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste subject to the Land Disposen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous wastern and the contract of the contract	rtation according to applicable regulations: AND, If the sail Restrictions, I certify and warrant that the waste has	UNITS P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER
ection II TRANS	PORTER	
TRANSPORTER I	TRANSPORT	ER II
Name: Lous	h. Name:	
Address: Pow Time MI.	i. Address:	
Driver Name/Title: 100 THURST	j. Driver Name/Title:	
PRINTITYE		PRINT/TYPE
Phone No.: e. Truck No.:	k. Phone No.:	I. Truck No.:
Vehicle License No./State: AC 77 5 3 7	m. Vehicle License No./State:	
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materi	als:
641114B		
Driver Signature Shipment Date	Ti. Driver Signature	Shipment Date
Control of the Contro	NATION	
Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230	
Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME	
NORTHVILLE MI 48168		
TICKET No.:	nd to the best of my knowledge the foregoing	is true and accurate.

#21/3

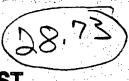
NON-HAZARDOUS SPECIAL WASTE MANIFEST

S		or completes all of Section i)
a.	United States Coast Guard Generator Name:	Same b. Generating Location:
C.	Address: 2660 Abwater	d. Address:
	Detroit, MI 48207	
e.	Phone No.:	f. Phone No.:
	If owner of the generating facility differs from the generator, provide:	
g.	Owner's Name:	h. Owner's Phone No.:
h.	WASTE CODE MI 687 140328	AH5296 515 TYPE
j.	Description of WasteContaminated Soil	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
		DODBO Y TR BAGTRUCK
	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous was state law, has been properly described, classified and packaged, and is in proper condition for transporta	tion according to applicable regulations: AND, If the
	waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dispose been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous wast	te as defined by 40 CFR Part 261.
~ フ・	m Goeral on O	Y - YARDS T - TONS Y3 CQUBIC YARDS
_	nerator Authorized Agent Name Signature	Shipment Date O - OTHER
S	ection II TRANSP	ORUER
	TRANSPORTER	TRANSPORTER II
a.	Name: Lou's	h. Name:
b.	Address: Poutine MI.	i. Address:
C.	Driver Name/Title: Rayling Sun +L	j. Driver Name/Title:
	医内部性 医心上 医乳腺 医乳腺性畸胎 医双氯酚 医海绵氏管治疗病 医皮肤病 医动物毒素皮肤 机熔料	PRINT/TYPE
1.5	Phone No.: e. Truck No.: 934	k. Phone No.:
f.	Vehicle License No./State: AC17797 MT.	m. Vehicle License No./State:
	Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
g.	- Kon South Bull 18	
	Driver Signature Shipment Date Oction III DESTINA	Driver Signature Shipment Date
	ADS ARBOR HILLS LANDELL	2/9 2/0 7/20
	Site Name:	c. Phone No.:
b.	Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME
	NORTHWILE, MI 48188	
e.	TICKET No.:	
: :	I hereby certify that the above named material has been accepted and	to trie best of my knowledge the foregoing is true and accurate.
ī.	Name of Authorized Agent Signature	Receipt Date

#22,13

Name of Authorized Agent

NON-HAZARDOUS SPECIAL WASTE MANIFEST



4163668 (17926)

	erator completes all of Section II)
a. Generator Name:	Same b. Generating Location:
c. Address: 2660 Atwater	d. Address:
Detroit, MI 48207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
a: Owner's Name:	h. Owner's Phone No.:
n. WASTE CODE MI 687 14032	and the state of the control of the
. Description of Waste Contaminated Soil	k. Quantity Units Type DP - PLASTIC DRUM
	DDD3D Y TR B BAG TR - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardou state law, has been properly described, classified and packaged, and is in proper condition for trans	unortation according to applicable regulations: AND, If the
waste is a treatment residue of a previously restricted hazardous waste subject to the Land D been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	sposal Restrictions, I certify and warrant that the waste has UNITS
in boardton	Y YARDS T TONS
Renerator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
Section II TRAN	SPORTER
TRANSPORTER I	TRANSPORTER II
	h. Name:
D. Address:	i. Address:
Driver Name/Title:	j. Driver Name/Title:
l. Phone No.: e. Truck No.: <u>5 77</u>	k. Phone No.:
Vehicle License No./State: ACZZZS9 M.T.	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
Oriver Signature Shipment Date:	n
Section III DEST	INATION "
L Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: ²⁴⁸ -349-7230
o. Physical Address: 10690 W. SIX MILE RD	d. Mailing Address: SAME
	G. Priching Audi 655. We with
NORTHVILLE, MI 48168	
I hereby certify that the above named material has been accepted	and to the best of my knowledge the foregoing is true and accurate.
P	to and an my knowledge and torogoning is true and accurate.

Signature

4163015

71x 4 632147

	nerator completes all of Section II)
a. Generator Name:	Same b. Generating Location:
c. Address: 2660 Abvater	d. Address:
Detroit, MI 48207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
g. Owner's Name:	h. Owner's Phone No.:
h. WASTE CODE M! 687 1403	
j. Description of Waste	k. Quantity Units Type DF - PLASTIC DRUM DF - FIBRE DRUM
	B - BAG O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardox state law, has been properly described, classified and packaged, and is in proper condition for trans	us waste as defined by 40 CFR Part 261 or any applicable sportation according to applicable regulations: AND, If the
waste is a treatment residue of a previously restricted hazardous waste subject to the Land D been treated in accordance with the requirements of 40 CFR Part 258 and is no longer a hazardous statement.	is waste as defined by 40 CFR Part 261. P - POUNDS
Tim Goergy on D	Y - YARDS T - TONS Y3 - CUBIC YARDS
Generator Authorized Agent Name Signature	Shipment Date O - OTHER
Section II	ISPORTER
TRANSPORTER I	TRANSPORTER II
a. Name: Lou's Transsort	h. Name:
o. Address: Pantiac, as T	i. Address:
c. Driver Name/Title: Stand Standard PRINT/TYPE	j. Driver Name/Title:
	PRINT/TYPE
1. Phone No.: <u>43</u>	k. Phone No.: I. Truck No.:
. Vehicle License No./State:	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
Driver Signature Shipmant Date	Driver Signature Shipment Date
Section III DES	IIINATION
. Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
D. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
NORTHWILE ME ARIES	
2. TICKET No.:	
	and to the best of my knowledge the foregoing is true and accurate
Name of Authorized Agent Signature	Receipt Date

_	ection General General	or co	
a.	United States Coast Guard Generator Name:	b.	Same Generating Location:
~	Address: 2660 Atwater		Address:
U.	Detroit, MI 48207	u.	Address.
			·
e.	Phone No.:	f.	Phone No.:
	If owner of the generating facility differs from the generator, provide:		A A A
g.	Owner's Name:		Owner's Phone No.:
h.	WASTE CODE MI - 687 - 140328	<u> </u>	AH5296 515 TYPE
i	Description of WasteContaminated Soil		Quantity Units Type DM - METAL DRUM On the DP - PLASTIC DRUM
,-			DF - FIBRE DRUM B - BAG TR - TRUCK
	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous wa		defined by 40 CFR Part 261 or any applicable
	. state law, has been properly described, classified and packaged, and is in proper condition for transport waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dispos been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous was	al Re	strictions, I certify and warrant that the waste has
1		240 GS	Y -YARDS
_ _	nerator Authorized Agent Name Signature	5	C) 4 / 3 / 3 T - TONS - CUBIC YARDS O - OTHER
		VA -	Snipmeni Date
2	ection II TRANSF	<u> </u>	(ILEN)
	TRANSPORTER I		TRANSPORTER II
1.	Name: Louis Transport	h	. Name:
	Address: 1780 High wood	i	
		••	Address:
	- torTrac, MI		
:	Driver Name/Title: GAFU FRINT/TYPE SATA	j.	Driver Name/Title: PRINT/TYPE
	-	k	Phone No.: I. Truck No.:
	Phone No.: <u>77</u> e. Truck No.: <u>77</u>	ł	and the state of t
•	Vehicle License No./State: AA 51807	i n	n. Vehicle License No./State:
	Acknowledgment of Receipt of Materials:		Acknowledgment of Receipt of Materials:
	a de 1 7 2012		
'-	Ontel Signature Shipment Date		Driver Signature Shipmant Date
S	ection III DESTUN	ΑŢ	<u>ON</u>
L.	Site Name:ADS ARBOR HILLS LANDFILL	c.	Phone No.: 249-349-7230
	Physical Address: 10090 W. SIX MILE RD		Mailing Address: SAME
••		u.	THAIRING FIGHT COOK
٠	NORTHVILLE MI 49169		
<u>.</u>	TICKET No.:	al 1	the best of my beautifules the formation in the second
	I hereby certify that the above named material has been accepted an	u 10	the best of my knowledge the foregoing is true and accurate.
•	Name of Authorized Agent Signature		Receipt Date

4163017

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section I		TOR (Generator)	completes all of Sec	ion ()	
a. Generator Name:	stes Coast Guard	t	o. Generating Lo	Same cation:	
c. Address: 2669 Atw	ater	•	entropy of the second		
Detroit, M	1 48207		/warcss	······································	
e. Phone No.:			. Phone No.:		
If owner of the generating facility di	fers from the generator, pro-	ovide:	√ 1.		
g. Owner's Name:			n. Owner's Phone	No.	
	687_	-		96 515	IYPE
j. Description of Waste	interminated Soil		c. Quantity	Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby cer state law, has been properly described, classific weste is a treatment residue of a previously been treated in accordance with the requirement of the control of	ed and packaged, and is in proper or restricted hazardous waste subjects of 40 CFR Part 268 and is no lon	ondition for transportation of to the Land Disposal R ger a hazardous waste a	according to applicable re estrictions, I certify and we a defined by 40 CFR Part	gulations: AND, If the mant that the waste has	UNITS P - POUNDS Y - YARDS T - TONS Y3 - CUBIC YARDS O - OTHER
Section II	·			er er Sekindbal sind	
a. Name:	9 6 C 1 W 2 K PRINT/TYPE e. Truck No.:	215	j. Driver Name/ k. Phone No.: _ m. Vehicle Licens		PRINT/TYPE 1. Truck No.:
J. Driver Signature	4 1 ;	2 1 3 t Date	Driver Signature	· ·	Shipment Date
Section III		DESTINAT	ION NOT		
a. Site Name: ADS ARE	OR HILLS LANDFIL	L C	. Phone No.:	48-349-7230	
	SIX MILE RD		Mailing Addres	s: SAME	
NORTHM: NOR		48168	o the best of my k	nowledge the foregoing	is true and accurate.
			resident.		
Name of Authorized Agent	Signature			Receipt Date]

	e e e e e e e e e e e e e e e e e e e		nais.	
Section I :		ATOR (Generat	or completes all of Section ()	
a. Generator Nan	United States Coast Guard		Same b. Generating Location:	
	2660 Atwater	*	d. Address:	
c. Address:	Detroit, MI 48207	 ·	d. Address: \(\frac{\tau}{2}\)	
				
e. Phone No.:			f. Phone No.:	
If owner of the ge	enerating facility differs from the generator,	provide:		• • •
g. Owner's Name	:		h. Owner's Phone No.:	· · · · · · · · · · · · · · · · · · ·
h. WASTE CODE	M1 687	140328	AH5296 _515	IYPE
j. Description of \	Waste		k Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
			TR	B - BAG TR - TRUCK
	TIFICATION: I hereby certify that the above named materi operly described, classified and packaged, and is in prop			O -OTHER
waste is a treatment	residue of a previously restricted hazardous waste su lance with the requirements of 40 CFR Part 268 and is no	bject to the Land Disposi	al Restrictions, I certify and warrant that the waste has	UNITS P - POUNDS
Juni Goo	10 /6x3			Y - YARDS T - TONS
Generator Authorized A	gent Name Signature	7	Shipment Date	Y3 - CUBIC YARDS O - OTHER
Section II		TRANSE	OBJER STATE	
	3 - 32 - 47 - 5 - 50 - 1 - 1			
	TRANSPORTER!		TRANSPOR	TER II
a. Name:	is Transfelf		h. Name:	
	2811 Hil mid		i. Address:	
Driver Name/Ti	tie: \sum_{\chi_1,\chi_2}		j. Driver Name/Title:	
. Driver (value)	PRINT/TYPE		j. Driver Ivalile/Tibe.	PRINT/TYPE
d. Phone No.:	e. Truck No.:	53	k. Phone No.:	_ I. Truck No.:
. Vehicle License	e No./State:		m. Vehicle License No./State:	
Acknowledame	ent of Receipt of Materials:		Acknowledgment of Receipt of Mater	ials:
Λ				
Driver Signature	<u> </u>	TZ / J J	n	Shipment Date
Section III		DESTIN		Simple Case
and the second s	ADS ARBOR HILLS LANDFIL		248-340-7230	
a. Site Name:			c. Phone No.:	
o. Physical Addres	ss: 10620 W. SIX MILE RD		d. Mailing Address: SAME	<u> </u>
	NORTHVILLE MI	48183		
TICKET No.: _		_ <u></u>		
I hereby certify	that the above named material has be	en accepted and	d to the best of my knowledge the foregoing	is true and accurate.
		\		
	ie c	1	more datistiff	$\sqrt{}$
Name of Authorized	Agent Signature	1	Receipt Date	
			123204	
		$\overline{}$		

632978 **4163020**

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Ŝ	Ction I. United State County Land	ator co	impletes all of Section ().	
a.	Generator Name:	b.	Generating Location:	
C.	2060 Atwater Address:	d.	Address:	
	Detroit, MI 46207			
ė.	Phone No.:	f.	Phone No.:	
	If owner of the generating facility differs from the generator, provide:		- (8) ** - (8) **	
α.	Owner's Name: MI 687 1403	h.	Owner's Phone No.:	
h.	WASTE CODE		AH5296 515	IYPE
ı L	WASTE CODEContaminated Soil Description of Waste	k.	Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
•				B - BAG TR - TRUCK O - OTHER
ψ.	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous w state law, has been properly described, classified and packaged, and is in proper condition for transpot waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dispot been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous with	ntation a	coording to applicable regulations: AND, if the trictions, I certify and warrant that the waste has	UNITS P - POUNDS Y - YARDS
ر درا	Perator Authorized Agent Name Signature	_	041213	T - TONS Y3 - CUBIC YARDS
Ge	nerator Authorized Agent Name Signature		Shipment Date	O - OTHER
	ection!II TRANS	POR	TER:	
	TRANSPORTER I		TRANSPORT	TER II
a.	Name: Low TOAMSPORT	h	. Name:	
b.	Address: 1750 E Highe ocal	i.	Address:	
	Pontine ui			
C.	Driver Name/Title: DAVE SCI COUTIL	j.	Driver Name/Title:	PRINT/TYPE
d.	Phone No.: 47/	k	. Phone No.:	I. Truck No
f	Vehicle License No./State: AC237 (5	, ,	n. Vehicle License No./State:	
••	Acknowledgment of Receipt of Materials:		Acknowledgment of Receipt of Materi	als:
÷				
g.	Driver Signature Shipment Date	n	Driver Signature	Shipment Date
S	ection III DESTIN	ITAV	And the control of th	
a.	AUS AREOR HILLS LANDFILL Site Name:	c.	248-349-7230 Phone No.:	
b.	Physical Address: 10690 W. SIX MILE RD	d.	Mailing Address: SAME	
	NORTHVILLE MI. 48168			
e.	TICKET No.:		•	
	I hereby certify that the above named material has been accepted ar	nd to	the best of my knowledge the foregoing	is true and accurate
			<u> </u>	
f.				
	Name of Authorized Agent Signature		Receipt Date	

4163021 TW 632149

ection Generation (Generation)	rator/completes;all of Section if)
United States Coast Guard	Same
a. Generator Name:	b. Generating Location:
c. Address: 2680 Atwater Detroit, MI 48207	d. Address:
Lieu est, inti 40207	
a. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	(1.) 현실 (1.) 프랑테리아 (1.) 이 보면, 현실 (1.) 보고 있는데 함께 함께 나는 그는 일 사람들에게 되었다. 하는 하는 사람들이 나를 받았다.
. Owner's Name:	h. Owner's Phone No.:
. WASTE CODE M1 - 687 - 14032	
Description of Waste	k. Quantity Units Type DP - PLASTIC DRUM DF - FIBRE DRUM DF - FIBRE DRUM
	DOORD Y TR BAG TR TRUCK O OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for transpose waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disp been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waster subject. The condition of the c	critation according to applicable regulations: AND, if the posal Restrictions, I certify and warrant that the waste has
	SPORTER
TRANSPORTER I	TRANSPORTER II h. Name:
Address: Pontiac M.	i. Address:
Driver Name/Title: Stric Shiff January	j. Driver Name/Title:
. Phone No.: e. Truck No.: 837	k. Phone No.:
Vehicle License No./State:	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
<1 <0 1 041213	
Driver Signature Shipment Date	
Section III.	NATION :
. Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
. Physical Address: 10090 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE MI 18188	
TICKET No.: I hereby certify that the above named material has been accepted a	and to the best of my knowledge the foregoing is true and accurate.
Name of Authorized Agent Signature	Receipt Date

4163022

S	ection GENERATOR (G	enerator completes all of Section I)
a.	Generator Name:	b. Generating Location:
C.	Address: 2000 Atwater	d. Address:
	Detroit, kii 48207	
	Phone No.:	f. Phone No.:
.	If owner of the generating facility differs from the generator, provide:	
		h. Owner's Phone No.:
g.	Owner's Name: MI 987 140	
h.	WASTE CODE	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM
j.	Description of Waste	DF - FIBRE DRUM B - BAG
	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazar	O - OTHER
	state law, has been properly described, classified and packaged, and is in proper condition for to weste is a treatment residue of a previously restricted hazardous waste subject to the Lambeen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazard	ransportation according to applicable regulations: AND, if the of Disposal Restrictions, I certify and warrant that the waste has UNITS
\	been treated in accordance with the requirements of 40 CFH Part 208 and is no longer a nazard	P - POUNDS Y - YARDS T - TONS
7	inerator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
**	ection III	
	TRANSPORTER I	TRANSPORTER II
a.	Name: Lou's	h. Name:
b.	Address: Pontiac MI.	i. Address:
C.	Driver Name/Title: Jim Wuchney	j. Driver Name/Title:
- F	and the contract of the contra	k. Phone No.:
đ.	Phone No.:e. Truck No.: Z55	
f.	Vehicle License No./State: AC 22256.	m. Vehicle License No./State:
	Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
g.	1-11-11212	<u></u>
	Driver Signature Shipment Date	Daiver Signature Shipment Date STINATION
<u> </u>	Section III A DE ARBOR HILLS LANDFILL	248-349-7230
a.	Site Name:	c. Phone No.:
b.	Physical Address: 10890 W. SIX MILE RD	d. Mailing Address:
	NORTHVILLE, MI. 4818	焓
e.	•	
	I hereby certify that the above named material has been accept	ted and to the best of my knowledge the foregoing is true and accurate.
f.	Name of A calculation o	Bergint Dette

	erator completes all of Section II);
United States Coast Guard Generator Name:	Sarne b. Generating Location:
2000 411	
Detroit, MI 48207	d. Address:
	[1] 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
. Owner's Name:	h. Owner's Phone No.:
. WASTE CODE MI 887 _ 14832	28 _ AH5296 _515 IYPE
Description of Waste Contaminated Soil	k. Quantity Units Type DP - PLASTIC DRUM
	POD3D F FIBRE DRUM B - BAG TR - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous	us waste as defined by 40 CFR Part 261 or any applicable
state law, has been properly described, classified and packaged, and is in proper condition for trans- waste is a treatment residue of a previously restricted hazardous waste subject to the Land Di- been treated in accordance with the requirements of 40 CFR Part 268 and is no-tonger a hazardous	Isposal Restrictions, I certify and warrant that the waste has UNITS waste on defined by 40 CFR Part 261
I'm Goerat on	P - POUNDS Y - YARDS T - TONS
Enerator Authorized Agent Name Signature	Shipment Date Y3 - CUBIC YARDS O - OTHER
	SPORTER
on the second of the second	
TRANSPORTER I	TRANSPORTER II
. Name: Lou's Transport	h. Name:
. Address: Pontiac MT	i. Address:
1780 Hishward	
Driver Name/Title: GATU FOISUTH	j. Driver Name/Title:
PRINT/TYPE	J. Diver (Valine Fide: PRINT/TYPE
. Phone No.: 332 52 87 e. Truck No.: 22	k. Phone No.: I. Truck No.:
Vehicle License No./State: AA 51807_	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
A ary Storeth 04/2/3	n
Section III DEST	Driver Signature Shipment Date
ADS ARBOR HILLS LANDELL	242 240 7220
. Site Name:	c. Phone No.:
. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE, MI 48168	
. TICKET No.:	
· · · · · · · · · · · · · · · · · · ·	and to the best of my knowledge the foregoing is true and accurate.
Name of Authorized Agent Signature	Receipt Date

4163058

	rator completes all of Section I)
United States Coast Guard a. Generator Name:	b. Generating Location:
c. Address: 2660 Atwater	d. Address:
Detroit, MI 48207	u. Aduress.
é. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	일반, 통이 전환하는데 그는 이상 밤이 이 그렇게 되었다.
g. Owner's Name:	h. Owner's Phone No.:
h. WASTE CODE MI 887 - 14032	8 AH5296 515 MPE
j. Description of Waste Contaminated Soil	k Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - BBRE DRUM
	DO 30 V TO BE - BARE DRUM B - BAG TR - TRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous	waste as defined by 40 CFR Part 261 or any applicable
state law, has been properly described, classified and packaged, and is in proper condition for transpo waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disp been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous w	osal Restrictions, I certify and warrant that the waste has
Jim Goerdt on	P - POUNDS Y - YARDS T - TONS
Generator Authorized Agent Name Signature	5 0 9 1 3 1 3 Y3 - CUBIC YARDS: Shipment Date O - OTHER
	그는 기술에 되어 가장 그는 그는 작품을 들어 그리고 있는 것이 그는 그는 그를 그렇게 어떻게 되었습니다.
Section III	PORTER:
TRANSPORTER I	TRÂNSPORTER II
a. Name: Lous	h. Name:
b. Address: Putine MT.	i. Address:
or rodiess.	1. Addiess.
C. Driver Name/Title:	j. Driver Name/Title:
d. Phone No.: 53	k. Phone No.:
1: Véhicle License No./State: AC 777.46 MT	
	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
6 2/2/1/2/3	
Driver Signature Shipment Date	Driver Signature Shipment Date
	NATION
a. Site Name: ADS ARBOR HILLS LANDFILL	c. Phone No.: 249-349-7230
b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
e. TICKET No.:	nd to the best of my knowledge the foregoing is true and accurate
The boy bottly trace above named indicate has been accepted a	no to the book of my minomedge the foregoing is frue and acculate.
The second secon	
·假	

	nerator completes all of Section ()	4.5
United States Coast Guard a. Generator Name:	b. Generating Location:	
c. Address: 2080 Abwater	d. Address:	
Detroit, MI 48207		
e. Phone No.:	f. Phone No.:	
If owner of the generating facility differs from the generator, provide:		
g. Owner's Name:	h. Owner's Phone No.:	
h. WASTE CODE MI 687 1403	AH5296_ 616	IYPE
j. Description of WasteCantaminated Soil	k Quantity Units Type	DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
1 20,61	00030 T	B - BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a herestron state law, has been properly described, classified and packaged, and is in proper condition for trans	isportation according to applicable regulations: AND, If the	
waste is a treatment recidue of a previously restricted hazardous waste subject to the Land D been treated in accordance with the requirements of 40 CFR Part 258 and is no longer a hazardou		UNITS P - POUNDS
Tim Coardton		Y - YARDS T - TONS Y3 - CUBIC YARDS
Generator Authorized Agent Name Signature	Shipment Date	O - OTHER
Section III	ISPORTER	
TRANSPORTER	TRANSPORT	
a. Name: Lou's b. Address: Porting MI	h. Name:	
b. Address: Parting Mil	i. Address:	
1780 F Highwood		
c. Driver Name/Title: DAVE SCE 99115	j. Driver Name/Title:	
Programme .		PRINT/TYPE
d. Phone No. 322-5687 e. Truck No.: 57/	k. Phone No.:	_ I. Truck No.:
f. Vehicle License No./State: 4021258	m. Vehicle License No./State:	1
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materi	als:
04/12/1/2		
Driver Signature Signature Shipiment Date	Driver Signature	Shipment Date
Section III DES	TINATION	
a. Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230	
b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME	~ >1
	7	401
NORTHVILLE, MI 49181		
e. TICKET No.: I hereby certify that the above named material has been accepted	and to the best of my knowledge the foregoing	is true and accurate
indicate that the decrease in the second decr		
\sim	d.Inthal].
i	17/1/1/1/	

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S	ection II.		RATOR (Generati	or completes all of Section I)
a.	Generator Name:	United States Coast Guard		b. Generating Location:
C.	Address:	2680 Atwater		d. Address:
		Detroit, MI 48207	* 1	
e.	Phone No.:			f. Phone No.:
: :	If owner of the gene	rating facility differs from the generator	, provide:	
g.	Owner's Name: _		e de la companya del companya de la companya de la companya del companya de la co	h. Owner's Phone No.:
h.	WASTE CODE	MI 687	140328	AH5296_515 TYPE
j.	Description of Was	ste Contaminated Soil		k. Quantity Units Type DP - PLASTIC DRUM DF - FIBRE DRUM DF - FIBRE DRUM
				B -BAG TR - TRUCK O - OTHER
d Solve Ref	state law, has been properly	y described, classified and packaged, and is in pro	per condition for transportat	ste as defined by 40 CFR Part 261 or any applicable ition according to applicable regulations: AND, If the
		tue of a previously restricted hazardous waste a with the requirements of 40 CFR Part 268 and is n		A SECTION OF THE POUNDS OF THE
	im Gos		٠, ٨	Y -YARDS T -TONS Y3 -CUBIC YARDS
Gei	nerator Authorized Agent	Name Signature		Shipment Date O - OTHER
S	ection II 💸 🕡		TRANSP	ORIER CONTRACTOR
		:TRANSPORTER I		TRANSPORTER II
2	Name: //./	C TEDERICAT TO		h. Name:
	Carlo Ca	CE. Nickingso		i. Address:
		.Ac de		1. Audiess.
ς.				
C.	Driver Name/Title:	PRINT/TYPE		j. Driver Name/Title: PRINT/TYPE
d.	Phone No.: 24	8. 372- 145 e. Truck No.	Qu1	k. Phone No.: I. Truck No.:
1.	Vehicle License N	o/State: 4 (24 6 3 /		m. Vehicle License No./State:
		of Receipt of Materials:		Acknowledgment of Receipt of Materials:
			1111	
g.	Driver Signature	Shi	oment Date	n. Driver Signature Shipment Date
S	ection III		DESTINA	ATION
a.	Site Name:	ADS ARBOR HILLS LANDFI	Ц , .	c. Phone No.: 248-349-7230
	Physical Address:	10690 W. SIX MILE RD		d. Mailing Address: SAME
	.,, 0.00; , 10010001		40400	
	TICKET No.	NORTHVILE MI	<u>48168</u>	
B	TICKET No.: I hereby certify that	at the above named material has b	een accepted and	d to the best of my knowledge the foregoing is true and accurate
	em Gradisa Gradisa			
•		;		
	Name of Authorized Age	nt Signature		Receipt Date

4163061 Tix* 632148

Generator Name:	Same b. Generating Location:	
Address: 2680 Atwater	d. Address:	
Detroit, MI 48207	u. Address.	
Phone No.:	f. Phone No.:	
If owner of the generating facility differs from the generator, provide:		
Owner's Name:	h. Owner's Phone No.:	
WASTE CODE 687 _ 1403	BAH5296_515	IYPE
Description of WasteContaminated Soil	I DM - ME1)CK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardor, state taw, has been properly described, classified and packaged, and is in proper condition for transwaste is a treatment residue of a previously restricted hazardous waste subject to the Land D been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous merator Authorized Agent Name Signature	tation according to applicable regulations: AND, if the sal Restrictions, I certify and warrant that the waste has sate as defined by 40 CFR Part 261. P - POL	IDS IS BIC YARDS
ection II	PORTER	
TRANSPORTER I	TRANSPORTER II	
		The Care Age of F
	h. Name:	
		A STATE OF THE STA
Address: Pandratt, mis	h. Name:i. Address:	A Section of the sect
Driver Name/Title:	h. Name: i. Address: j. Driver Name/Title:	
Address: Dander Andress: Driver Name/Title: Driver Name/Title: Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: 237	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: 1. Truck N	
Address: Dander Andress: Driver Name/Title: Driver Name/Title: Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: 237	h. Name: i. Address: j. Driver Name/Title:	
Driver Name/Title: Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: 437 Vehicle License No./State: AAHATHT	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck N m. Vehicle License No./State:	
Address: Driver Name/Title: Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: 437 Vehicle License No./State: AAHAAAAA Acknowledgment of Receipt of Materials: Driver Signature Shipment Date	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck No.: M. Vehicle License No./State: Acknowledgment of Receipt of Materials: n.	No.:
Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: \$37 Vehicle License No./State: \$\sigma \text{PAPE ACKnowledgment of Receipt of Materials:} Driver Signature Shipment Date DES	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck No.: M. Vehicle License No./State: Acknowledgment of Receipt of Materials: Driver Signature ATION	No.:
Address: Driver Name/Title: Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: \$37 Vehicle License No./State: PAHATHATALA Acknowledgment of Receipt of Materials: Driver Signature Shipment Date ADS ARBOR HILLS LANDFILL Site Name:	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck Norm. Vehicle License No./State: Acknowledgment of Receipt of Materials: n. Driver Signature	No.:
Address: Driver Name/Title: Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: \$37 Vehicle License No./State: PAHATHATALA Acknowledgment of Receipt of Materials: Driver Signature Shipment Date ADS ARBOR HILLS LANDFILL Site Name:	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck Normality m. Vehicle License No./State: Acknowledgment of Receipt of Materials: n. Driver Signature ATTON 248-349-7230	No.:
Driver Name/Title: PRINT/TYPE Phone No.: e. Truck No.: \$37 Vehicle License No./State: \$\sigma A \sigma A \s	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck Normality m. Vehicle License No./State: Acknowledgment of Receipt of Materials: n. Driver Signature ATTON 248-349-7230	No.:
Driver Signature Section III Shipment Date DEST ADS ARBOR HILLS LANDFILL Physical Address: 10880 W. SIX MILE RD	h. Name: i. Address: j. Driver Name/Title: PRINT/TYPE k. Phone No.: I. Truck Norm. Vehicle License No./State: Acknowledgment of Receipt of Materials: n. Driver Signature ATTON c. Phone No.: 248-349-7230 d. Mailing Address: SAME	No.:

S	ection GENERATOR (Gen	erator co	empletes all of Section I)	Control W. S.
	Generator Name:	b,	Generating Location:	A Commence of the Commence of
	2690 Atwater	-	Address:	The second of the particle of
C.	Address: Oetroit, Mt 48207	u.	Aduress.	
· ·			***	
е.	Phone No.:	f.	Phone No.:	**
	If owner of the generating facility differs from the generator, provide:		inger Santa	
a.	Owner's Name:	h.	Owner's Phone No.:	
.	MI 687 1403	28	AH5296 515	l wor
h.	WASTE CODECantaminated Soil		•	IYPE DM - METAL DRUM
i.	Description of Waste	<u>k.</u>	Quantity Units Type	DP - PLASTIC DRUM DF - FIBRE DRUM
 		L	Dy & Ta	B - BAG TR - TRUCK O - OTHER
	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for trans	s waste as	defined by 40 CFR Part 261 or any applicable	<u> </u>
	seaso law, rise treatment residue of a previously restricted hazardous waste to be treatment residue of a previously restricted hazardous waste subject to the Land Ditbeen treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	isposal Rea	strictions, I certify and warrant that the waste has	UNITS P - POUNDS
7	im Goardton			Y - YARDS T - TONS
$\mathbf{\Delta}$	what and comment	\sum	04/19/13	Y3 - CUBIC YARDS O - OTHER
Gè		en ava. Parakan	Shipment Date	O FORMER
S	ection II	SPOF	TER	
Minarita .				
	TRANSPORTER I	- N	TRANSPORT	TER II
_	Name: Louis Transport Address: 1780 High wood		ı. Name:	
a.	NameCOL 3 VANSJOFT	' '	. Name.	
b.	Address: 1780 High wood	. i.	Address:	
· ; .	PORTION MI			
			•	
C.	Driver Name/Title: GACW FRANTIYES 9Th	j	Driver Name/Title:	PRINT/TYPE
				*
d.	Phone No.: 3325680 e. Truck No.: 22	, k	. Phone No.:	_ I. Truck No.:
f.	Vehicle License No./State: AA 51807	r	n. Vehicle License No./State:	
			Acknowledgment of Receipt of Mater	
	Acknowledgment of Receipt of Materials:		Ackilowledgillerit of Necept of Mater	idis.
g.	Officer Signature Supmert Date		7. Driver Signature	Shipment Date
.	ection III.	INAT	ION:	
	ALS ARBOR HILLS LANDFILL		248-349-7230	
a.	Site Name:	C.	Phone No.:	
b.	Physical Address: 10880 W. SIX MILE RD	d.	Mailing Address: SAME	
-31 111	NORTHVILLE, MI. 48168			
·. · .				
e.	TICKET No.:	ond in	the heat of my knowledge the forcesing	in true and assurate
	I hereby certify that the above named material has been accepted	and 10	the best of my knowledge the loregoing	is true and accurate
				_
1.			December Dete	_4

	ction I		NERATOR (Gener	stor compl	etes all of Section	mil):			
8	Generator Name:	United States Coast Gu	ard	b Gr	enerating Loca	Same			
		2660 Abwater							
C.	Address:	Detroit, MI 48207		d. Ad	ldress:				
				_					
e .	Phone No.:			f. Ph	one No.:				
	If owner of the generat	ing facility differs from the gener	rator, provide:						
g.	Owner's Name:			h. Ov	vner's Phone	No.:	:		
h.	WASTE CODE	MI_ 887	14032	8 _	AH52	9 6 _ 51	5	1 Y	PE :
i	Description of Waste	Contaminated S	oil	k. Qı	uantity	Units	Туре	DM - METAL DP - PLASTIC	DRUM
,-	Description of Waste				TÍTI			DF - FIBRE D B - BAG TR - TRUCK	RUM
		ON: I hereby cartify that the above named						O - OTHER	
T.	waste is a treatment residue	escribed, classified and packaged, and is in of a previously restricted hazardous with the requirements of 40 CFR Part 268 ar	aste subject to the Land Disp	osai Restrictio	ns, I certify and warr	ant that the waste	he has	ŲN	<u>ıs</u>
$\dot{L}^{arepsilon}$	in Cons	21 cm		asio as deine	XI DY 40 CFH PERT 26	··		P - POUNDS Y - YARDS	
حجر	12 2122	arne Signature			b	4112	13	T - TONS Y3 - CUBIC Y O - OTHER	ARDS
e		ame Signature				Shipment I	Date L	- CAMER	
<u> ဗ</u>	ection II		TRANS	KOH DE	H)	y 2 4004/67			i de la companya de
		TRANSPORTER I				TRA	NSPORTE	R II	
B	Name:	5		h N	lame:		ATALO LA MINISTRA DE SANGAPORO		
	Address: Po					inger to the			
υ. 	Address: 18			1. ^	ddress:				
				_					
C.	Driver Name/Title: _	SizA Bullifer		j. D	river Name/Ti	tie:	PF	INT/TYPE	
	Phone No.:	e Truck	No.: 2/5	 	hone No.:			I. Truck No.:	
			<u>J</u>					. Huck No	
1. s	Vehicle License No./			1	ehicle License				
<i>e</i>	Acknowledgment of	Receipt of Materials:		A	cknowledgme	ent of Receip	t of Materials	:	
	7 1	the oy	1 7 15			·			
y. 	Driver Signature		Shipment Date	" D	river Signature 🔾			Ship	ment Date
S	ection III			NATION					
a.	Site Name:	ADS ARBOR HILLS LA	NOFILL	c. Ph	ione No.: 2	48-349-723	30		
h	Physical Address:	10690 W. SIX MILE RD		d. Ma	ailing Address	SAME			
				u. 1174	aming Accircos			• • • •	
		NORTHVILLE, N	AI 48168	. -					<u> </u>
e.	TICKET No.:	ho above pared		, d & = .et			6		
	i nereby certify that t	he above named material ha	as been accepted a	nd to the	dest of my kn	owleage the	toregoing is	true and acc	urate.
	•				#** -		' 		
f.	Name of Authorized Agent	Signat	ture		·	Receip	t Date		
	wir incidence regorit	Oigi au				i social			

S	ection I GENERATOR (Ge	nerator c	ompletes all of Section ()
a.		_ b.	Same Generating Location:
C.	Address: 2660 Atwater	d.	. Address:
	Detroit, MI 48207		
	Phone No.:	_ f.	Phone No.:
	If owner of the generating facility differs from the generator, provide:		
I•	Owner's Name:	_ h.	Owner's Phone No.:
١_	WASTE CODE 687 _ 1403	328 _	AH5296 515 TYPE
-	Description of WasteContaminated Soil		. Quantity Units Type DP - PLASTIC DRUM DF - FIBRE DRUM
	ń	_ [TR TRUCK OTHER
	GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardo state law, has been properly described, classified and packaged, and is in proper condition for tra	insportation a	s defined by 40CFR Part 261 or any applicable according to applicable regulations: AND, if the
	waste is a treatment residue of a previously restricted hazardous waste subject to the Land been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardo		defined by 40 CFR Part 281.
7	nerator Authorized Agent Name Signature	ار سے بری	Y - YARDS T TONS T 3 - CUBIC YARDS
è	nerator Authorized Agent Name Signature	76-7	Shipment Date O - OTHER
S	ection II) TIRAL	NSPOF	RIVER
	TRANSPORTER I		TRANSPORTER II
			h. Name:
	Name: Lock Trace One +		
•	Address: 17 Vi Winterfuld	- [/'	. Address:
		-1	
	Driver Name/Title: PRINT/TYPE	_ j	Driver Name/Title:
	Phone No.: e. Truck No.:		k. Phone No.: I. Truck No.:
• •		' ·	
	Vehicle License No./State:	- '	m. Vehicle License No./State:
	Acknowledgment of Receipt of Materials:	_	Acknowledgment of Receipt of Materials:
	641213		n
(24)	Driver Signature Shipment Date		Driver Signature Shipment Date
S		TINAT	
L.	Site Name: ADS ARBOR HILLS LANDFILL	_ с.	. Phone No.: 248-349-7230
	Physical Address: 19880 W. SIX MILE RD	_ d.	. Mailing Address: SAME
	NORTHVILLE M 1818	a.	
!_	TICKET No.:	.	
•	I hereby certify that the above named material has been accepted	d and to	the best of my knowledge the foregoing is true and accurate
		· · · · ·	
	Name of Authorized Agent Signature		Receipt Date

417-13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

dionil		Same	
Generator Name:	D	. Generating Location:	
Address: Detroit, MI 40207	d	. Address:	·
Phone No.:		Phone No.:	
f owner of the generating facility differs from the generator, p			
Owner's Name: Will 58/	140328 h	A H 5 2 0 5	
NASTE CODEContaminated Soil		AH5296 515	IYPE
Description of Waste	k	Quantity Units Type 19 19 19 19 19 19 19 19 19 19 19 19 19	DF - FIBRE DRUM B - BAG TR - TRUCK
SENERATOR'S CERTIFICATION: I hereby certify that the above named materia table law, has been properly described, classified and packaged, and is in proper vaste is a treatment residue of a previously restricted hazardous waste subseen treated in accordance with the requirements of 40 CFR Part 268 and is no I	condition for transportation eject to the Land Disposal Re- longer a hazardous waste as	according to applicable regulations: AND, If the estrictions, I certify and warrent that the waste has	O - OTHER UNITS P - POUNDS Y - YARDS
enstor Authorized Agent Name Signature	کے در	Shipment Date	T - TONS Y3 - CUBIC YARDS O - OTHER
<i>y</i>		Snipment Date	
TRANSPORTER	TRANSPOL	RITER	ORTER II
TRANSPORTER I Name: H. M. Guura Address: Mt. ((+ m == 5)		TRANSF h. Name: i. Address:	
TRANSPORTER I Name: H. MT GALLING Address: Mt. ((+ m & s		TRANSF	
TRANSPORTER I Name: H. MT GALVIRO Address: Mt. ((xm and s) Driver Name/Title: Lore Black PRINT/TYPE Phone No.: \$10 650 360 e. Truck No.:	/09	TRANSF h. Name: i. Address:	PRINT/TYPE
TRANSPORTER I Name: H. MT. Garrier Address: Mt. ((xm ans) Driver Name/Title: Lorent Black PRINT/TYPE Phone No.: \$10 60 360 e. Truck No.:	/09	TRANSF h. Name: i. Address: j. Driver Name/Title:	PRINT/TYPE
TRANSPORTER I Name: Address: Oriver Name/Title: Phone No.: Vehicle License No./State: Address: TRANSPORTER I Address: PRINT/TYPE Phone No.: Vehicle License No./State: A 92.77	/09	TRANSF h. Name: i. Address: j. Driver Name/Title: k. Phone No.:	PRINT/TYPE 1. Truck No.:
TRANSPORTER I Name: Address: Oriver Name/Title: Oriver Name/Title	/09	TRANSF h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State:	PRINT/TYPE I. Truck No.: Materials:
TRANSPORTER I Mame: Address: Oriver Name/Title: Chone No.: Acknowledgment of Receipt of Materials: Oriver Signature Shipm Cition III	/OS_ VIT_ bert Date	TRANSF h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of I	PRINT/TYPE I. Truck No.: Materials:
TRANSPORTER I Name: Address: Address: Oriver Name/Title: Oriv	/OS_ VIT_ bert Date	TRANSF h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of I	PRINT/TYPE I. Truck No.: Materials:
TRANSPORTER I Name: Address: Oriver Name/Title: Oriver Signature Oriver Signature Oriver Signature Shipm Oriver Signature Oriver	/OS MIT bert Date	TRANSF h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of I	PRINT/TYPE I. Truck No.: Materials:
TRANSPORTER I Name: Address: Address: Phone No.: \$\(\frac{1}{2}\) (\$\(\frac{1}{2}\) (\$\(\frac{1}\) (\$\(\frac{1}{2}\) (\$\(\frac{1}\) (\$	/OS MIT bert Date	TRANSF h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of I	PRINT/TYPE I. Truck No.: Materials:
TRANSPORTER I Name: Address: Oriver Name/Title: Oriver Name/Title	/OS MI DESTINAT	TRANSF h. Name: i. Address: j. Driver Name/Title: k. Phone No.: m. Vehicle License No./State: Acknowledgment of Receipt of I	PRINT/TYPE I. Truck No.: Materials: Shipment Date

* C 13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section I GENERATOR (General Coast Guard	ator completes all of Section I)
a. Generator Name:	Same b. Generating Location:
c. Address: 2680 Atwater	d. Address:
Detroit, MI-48207	
e. Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	세계를 받아 있다. 1995년 - 1997년
g. Owner's Name:	h. Owner's Phone No.:
h. WASTE CODE 687 14032	
j. Description of Waste	k. Quantity Units Type DM - METAL DRUM DP - PLASTIC DRUM DF - FIBRE DRUM
위 회의 출발하는 학생이 보는 <u>기가는 전혀, 현존들은</u> 데	DODZS 4 TR BASTRUCK
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous w state law, has been properly described, classified and packaged, and is in proper condition for transpor	raste as defined by 40 CFR Part 261 or any applicable ration according to applicable regulations: AND, If the
weste is a treatment residue of a previously restricted hazardous waste subject to the Land Dispo been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous w	aste as defined by 40 CFR Part 261.
Jim Goeralt on	Y -YARDS T -TONS T -TONS T -TONS T - TONS T - TO
Generator Authorized Agent Name Signature	Shipment Date O - OTHER
Section II.	PORTER:
a. Name: H. M. ENUMO.	h. Name:
b. Address: M.T. Cleners M.I.	i. Address:
c. Driver Name/Title: Lot & Black PRINT/TYPE	j. Driver Name/Title: PRINT/TYPE
d. Phone No.: e. Truck No.:	k. Phone No.: 1. Truck No.:
1. Vehicle License No./State: AA 92/77 MI	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
G. Driver Signature Shipment Date	Driver Signature Shipment Date
Landa distribution of the state	NOTAN
a. Site Name:ADS ARBOR HILLS LANDFILL	c. Phone No.: 248-349-7230
b. Physical Address: 10890 W. SIX MILE RD	d. Mailing Address: SAME
NORTHVILLE, MI 49168	
e. TICKET No.:	
I hereby certify that the above named material has been accepted a	nd to the best of my knowledge the foregoing is true and accurate.
t	
Name of Authorized Agent Signature	Receipt Date

×3.3

NON-HAZARDOUS SPECIAL WASTE MANIFEST

		•		
edion I 🗽	GENERATOR (Ge	nerator o	impletes all of Section ()	
a. Generator Nam		_ b.	Same Generating Location:	
c. Address:	2660 Alwater	d	Address:	
o. 7.00.000	Detroit, MI 48207			
e. Phone No.:		_ f.	Phone No.:	
If owner of the ge	nerating facility differs from the generator, provide:			
•		h	Owner's Phone No.:	
	MI_ 687_ 140			TYPE
	Contaminated Soil			DM - METAL DRUM DP - PLASTIC DRUM
. Description of V	Vasie	_	Quantity Units Type DD Z8	DF - FIBRE DRUM B - BAG TR - TRUCK O - OTHER
state law, has been pro- wante is a treatment re	FICATION: I hereby certify that the above named material is not a hazard: perly described, classified and packaged, and is in proper condition for tracestime of a previously restricted hazardous waste subject to the Landinge with the requirements of 40 CFR Part 268 and is no longer a hazardous.	insportation a Disposal Re	ecording to applicable regulations: AND, if the strictions, I certify and warrant that the waste has	UNITS
712	100 /120			P - POUNDS Y - YARDS T - TONS
Senerator Authorized Ag	geni Name Signature		Shipment Date	Y3 - CUBIC YARDS O - OTHER
Section II	CITRA	NSPOF	(ER	
	TRANSPORTER I		TRANSPOR	RTER II
Name:	1 M. Guno		. Name:	
o. Address:^	14. Clemens MI	i.	Address:	
		-		
. Driver Name/Tit	de: Lorer Black PRINT/TYPE	_ j	Driver Name/Title:	PRINT/TYPE
i. Phone No.:	e. Truck No.: <u>19</u> 9	_ k	Phone No.:	I. Truck No.:
. Vehicle License	No./State: AA 92177	_ "	n. Vehicle License No./State:	
	nt of Receipt of Materials:		Acknowledgment of Receipt of Mate	erials:
Lan	-Bh 041713	} ,		
Deliver Signature	Shipment Date	TINIAT	Oriver Signature	Shipment Date
Section III	ADS ARBOR HILLS LANDFILL	PIERVAIL	ON 248-349-7230	
a. Site Name:		_	Phone No.:	
o. Physical Addres	ss: 10890 W. SIX MILE RD	_ d.	Mailing Address: SAME	
	NORTHVILLE, MI 4816	19		u u a li unit di
. TICKET No.: _		<i>'</i>		
	that the above named material has been accepte	d and to	the best of my knowledge the foregoin	g is true and accurate.
Name of Authorized	Agent Signature		Receipt Date	



NON-HAZARDOUS SPECIAL WASTE MANIFEST

Section I United State State Span Gene	erator/completes all of Section I)
Generator Name:	b. Generating Location:
2660 Atwater Address:	d. Address:
Detroit, Wi 48207	
Phone No.:	f. Phone No.:
If owner of the generating facility differs from the generator, provide:	
Owner's Name:	h. Owner's Phone No.:
MI 687 1403	28 AH5296 515 IYPE
Contaminated Soil	k. Quantity Units Type DP - PLASTIC DRUM
Description of Waste	DDDZP 4 TR B BAG TR - TRUCK O - OTHER
GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous state law, has been properly described, classified and packaged, and is in proper condition for transp	s waste as defined by 40 CFR Part 261 or any applicable portation according to applicable regulations: AND, If the
waste is a treatment residue of a previously restricted hazardous waste subject to the Land Dis been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous	waste as defined by 40 CFR Part 281. P - POUNDS
in Coerdt on	Y - YARDS T - TONS Y3 - CUBIC YARDS
enerator Authorized Agent Rappe Signature	Shipment Date O - OTHER
ection II	SPORTER:
TRANSPORTER I	TRANSPORTER II
Name: /A. M. Gara	h. Name:
Name: /t. M. Givad Address: Mt, Clemens M,	i. Address:
·	
Driver Name/Title: SAC R.	j. Driver Name/Title:
PRINT/TYPE	j. Driver Name/ ride.
Phone No.: e. Truck No.:	k. Phone No.:
Vehicle License No./State: RA (2.107 MT	m. Vehicle License No./State:
Acknowledgment of Receipt of Materials:	Acknowledgment of Receipt of Materials:
	and P arana and a second
ANO A ALDIS	
Driver Signature Shipment Date	
ection III DEST	Driver Signature Shipment Date INATION:
ection III	Driver Signature Shipment Date
ADS ARBOR HILLS LANDFILL Site Name: 10690 W SIX MUE PD	INATION 248-349-7230 c. Phone No.:
ADS ARBOR HILLS LANDFILL Site Name: Physical Address: DEST ADS ARBOR HILLS LANDFILL SITE NAME: 10890 W. SIX MILE RD	INATION Shipment Date 248-349-7230
Site Name: Physical Address: NORTHVILLE, MI. 48168	INATION 248-349-7230 c. Phone No.:
AUS ARBOR HILLS LANDFILL Site Name: Physical Address: NORTHVILLE, MI. 48168 TICKET No.:	INATION: 248-349-7230 c. Phone No.: d. Malling Address: SAME
Site Name: Physical Address: NORTHVILLE. DEST AUS ARBOR HILLS LANDFILL SITE NAME: NORTHVILLE. NORTHVILLE. MI. 48168	INATION 248-349-7230 c. Phone No.:
Site Name: Physical Address: NORTHVILLE. DEST AUS ARBOR HILLS LANDFILL SITE NAME: NORTHVILLE. NORTHVILLE. MI. 48168	INATION: 248-349-7230 c. Phone No.: d. Malling Address: SAME



NON-HAZARDOUS SPECIAL WASTE MANIFEST

		<u>च्यात्र संस्थ</u> ात					
Dection United States Coat	GENERATOR (Generati est Guard	or, co	mpletes all of Section	i) Sæne			
a. Generator Name:	· · · · · · · · · · · · · · · · · · ·	b.	Generating Locati				
c. Address: 2660 Atwater		d.	Address:		*		
Detroit, MI 48207	<u> </u>			$\frac{1}{2} = \frac{2}{2} \left(\frac{2}{2} \left(\frac{1}{2} \right)^{2} - \frac{1}{2} \right)$. 11		
e. Phone No.:		f.	Phone No.:		4		
If owner of the generating facility differs from the	e generator, provide:					1	
g. Owner's Name:		h	Owner's Phone N	o•			
	687 14032		AH529		. 1		TYPE
Contaminat	ted Sail	 k	Quantity	— - Units Tv	pe	DM - META	L DRUM
j. Description of Waste		5	0028	V F	n	DF - FIBRE B - BAG TR - TRUC	DRUM
GENERATOR'S CERTIFICATION: I hereby certify that the above						O - OTHE	
state law, has been properly described, classified and packaged waste is a treatment residue of a previously restricted hazar been treated in accordance with the requirements of 40 CFR Pa	rdous waste subject to the Land Disposa	al Rest	rictions, I certify and warrant	t that the weste has		· j	UNITS
Jim Goedt on	The same of the temper a mazanatus was	15 as u	Sales by 40 OFFI FEI ZOI.			P - POUN Y - YARD T - TONS	S
Generator Authorized Agent Name Sig		_	<u>_</u>	Shipment Date	3	T - TONS Y3 - CUBIC O - OTHE	C YARDS
•		OP		Shipment Date	-	77.45.55 ya 11	
Section II	TRANSP	Y.				<u> </u>	
a. Name: TRANSPORTER A. Name:		h.	Name:	TRANS	PORTE	ri II	
b. Address: Mt, Clemens	MI.	i.	Address:				
		: :	* <u>* * * * * * * * * * * * * * * * * * </u>				
c. Driver Name/Title: Lacen 1510	acu	j.	Driver Name/Title	e:			
PRINT	_ /AC					NT/TYPE	
	Truck No.: _/0.5	k.	Phone No.:		!	Truck No).:
I. Vehicle License No./State: <u>AA タス</u>	177 [1]	m	. Vehicle License I	No./State:			
Acknowledgment of Receipt of Materials:		· :,	Acknowledgment	t of Receipt of	Materials		
San Rh		_					
Driver Signature	Shipment Date	n.	Driver Signature				Shipment Date
Section III	DESTIN	ATIC	<u> </u>				
a. Site Name: ADS ARBOR HILL	LS LANDFILL	C.	Phone No.: 24	8-349-7230			4
o. Physical Address: 10690 W. SIX MILE	E RD	· ***	Mailing Address:	SAME		Tall State of State of	
NORTHVILLE,	<u> 4918</u> 9					<u>. </u>	
e. TICKET No.:	arial has been second	4 4 4	ho host of muclimen	uladas tha fass	taa ta t		
I hereby certify that the above named mater	mai nas ueen accepted and	. 10 £	ile desi of my know	wieuge ine 10/6	yoing is	irue and a	iccurate.
	•			* .			
			Γ	TTT	77	•	

#6-13

NON-HAZARDOUS SPECIAL WASTE MANIFEST

<u></u>	<u> </u>	1 /		
g. Owner's Name:	United States Coast Guard 2880 Atwatev Detroit, MI 48207 Ating facility differs from the generator, properties the conference of the conference of the conference of a proviously restricted hazardous waste subjected of a proviously restricted hazardous waste subjected in the conference of the conf	b. d. f. ovide: h. 140328 k. s not a hazerdous waste as condition for transportation act to the Land Disposal Res	according to applicable regulations: AND, If the strictions, I certify and warrant that the waste has united by AD CED Part 261	
Generator Authorized Agent	TRANSPORTER I.	TIRANSPOF	TRANSPORTER II	
b. Address:	The Clemens M. Sheet Print/Type e. Truck No.: 4	j.	Address: Driver Name/Title: PRINT/TYPE L. Phone No.: I. Truck No.: m. Vehicle License No./State:	
	Receipt of Materials: Shipmer ADS ARBOR HILLS LANDFIL	nt Dette	Acknowledgment of Receipt of Materials: Driver Signature Shipment Date	
e. TICKET No.: I hereby certify that f. Name of Authorized Agen		18168	Mailing Address: SAME the best of my knowledge the foregoing is true and accurate. Receipt Date	

ARBOR HILLS LAS. 10690 W SIX MILE F NORTHVILLE, MI 48108 2483497230

004671 HM ENVIRONMENTAL (T) **42826 N WALNUT** MT CLEMENS, MI 48043

INVOICE INBOUND

(1			
SITE	CELL	TICKET #			OPERATOR		
01		1	1230820		43967		
	RUCK		CONTAIN	ER	LICE	VSE	
Т	KM5004				<u> </u>		
	REFERENCE				IN	OUT	
416306	i5				4/9/13 8:19 am	4/9/13 8:19 am	

GROSS 150,580.00LBS Scale In CONTRACT: AH5296 52,720.00LBS Tare Out 97,860.00 LBS TARE NET BOL: QTY UNIT DESCRIPTION RATE TOTAL ORIGIN TAX TN Contaminated Solls (Ext) 48.93 WA 100.00

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

SIGNATURE:

I hereby certify that this load does not contain any unauthorized hazardous waste.

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

ſ						9 grę	
SITE	CELL	TICKET #			OPERATOR		
01		1	1230819		66750		
1	RUCK		CONTAIN	R	LICE	NSE	
TI	(MS002						
	REFERENCE				IN	OUT	
<u> </u>	ن مار،	304		4/9/13 8:19 am	4/9/13 8:19 am		

CONTRACT: A	H5296	GROSS 141,620.00LBS Scale In TARE 52,280.00LBS Tare Out NET 89,340.00 LBS						
QTY	UNIT	DESCRIPTION		ORIGIN	%	RATE	TAX	TOTAL
44.67	TN	Contaminated Soils (Ext)		WY .	100:00			

Total

Paid

Change

Check#

Recpt #

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:_

CUSTOMER COPY

O04671
HM ENVIRONMENTAL (T)
42826 N WALNUT
MT CLEMENS, MI 48043

OPERATOR CELL TICKET # SITE 1230822 43967 01 CONTAINER LICENSE TRUCK TKMS26* IN OUT REFERENCE 4/9/13 4/9/13 4163067 8:26 am 8:26 am

INVOICE INBOUND

CONTRACT: A	NH5296		GROSS TARE NET	149,620.00LE 54,360.00LE 95,260.00 L	BS Scale In BS Tare Out BS		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
47.63	TN	Contaminated Solls (Ext)	WY	100.00			

I hereby certify that this load does not contain any unauthorized hazardous waste.

Check# Recpt #

SIGNATURE:_____

CUSTOMER COPY:

Total Paid

Change

004671 HM'ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043 INVOICE

,						 a .	
SITE	CELL	TICKET #			OPERATOR		
01		1	230899	43967			
	RUCK		CONTAINE	R	LICE	NSE	
т	KMS004						
	I	REFER	ENCE		IN	ОИТ	
416306	i8				4/9/13 10:33 am	4/9/13 10:33 am	

CONTRACT: A	NH5296						
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
47.47	TN	Contaminated Soils (Ext)	WA	100.00			
].			1		1		
·				·			; ,
<u> </u>	1	·					turrestini f
)]				•		in the second
					,		A .

Total

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CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

STONATURE

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

TICKET # OPERATOR CELL SITE 1230910 43967 01 LICENSE TRUCK CONTAINER TKMS002 OŰŤ REFERENCE IN 4/9/13 4/9/13 4163069 10:43 am 10:43 am

GROSS 130,960.00LBS Scale In CONTRACT: AH5296 TARE NET 52,280.00LBS Tare Out 78,680.00 LBS BOL: QTY DESCRIPTION UNIT **ORIGIN** RATE TOTAL TAX Contaminated Soils (Ext) 39.34 TN WY 100.00

INVOICE

INBOUND

Total

Paid

Change

Check# Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

004671 HM ENVIRONMENTAL (T) 42826-N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

				1				
SITE	CELL	T	ICKET #		OPERATOR			
01		1	230924		43967			
	TRUCK		CONTAINER		LICENSE			
T	KMS26*					and the		
	REFERENCE				IN	ouī,		
416307	4163070				4/9/13 11:04 am	4/9/13 11:04 am		

CONTRACT: /	AH5296		GROSS TARE NET	153,180.00LB 54,360.00LB 98,820.00LB			
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
49.41	TN	Contaminated Soils (Ext)	WY	100.00			 -
				ŀ			
	}	·.	-				
	1	1				,	

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

004671 HM ENVIRONMENTAL (T) **42826 N WALNUT** MT CLEMENS, MI 48043

SITE CELL TICKET # OPERATOR 1231000 43967 01 CONTAINER LICENSE TRUCK **TKMS004** REFERENCE IN OUT 4/9/13 4/9/13 4163071 12:49 pm 12:49 pm

GROSS 146,200.00LBS Scale In CONTRACT: AH5296 TARE NET 52,720.00LBS Tare Out 93,480.00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN % RATE TAX TOTAL Contaminated Soils (Ext) 46.74 WA 100.00 TN

INVOICE

INBOUND

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

			-			
SITE	CELL	7	ICKET #	OPERATOR		
01	i	1	231010	66750		
	TRUCK		CONTAINE	R LICENSE		NSE
Т	KMS002					
	REFERENCE				IN	ОЛТ
416307	72				4/9/13 1:00 pm	4/9/13 1:00 pm

INVOICE INBOUND

CONTRACT: AH5296

BOL:

GROSS 156,340.00LBS Scale In

TARE 52,280.00LBS Tare Out NET 104.060.00 LBS

:	BOL.		NET 104,060.00 LBS					
: [QTY .	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
· •	52.03	TN	Contaminated Solls (Ext)	WY	100.00			
		 					}	
							1	
							,	

Total

Paid

Change

Check#

Recpt #

SIGNATURE:____

I hereby certify that this load does not contain any unauthorized hazardous waste.

CUSTOMER COPY

ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 SITE CELL TICKET # **OPERATOR** 2483497230 1231027 66750 01 CONTAINER LICENSE TRUCK 004623 TKMS26* **VESNA PURCHASING & SHARED SERVICE CENTER** 15 S 84TH ST STE 175 REFERENCE IN OUT 30420 FORD STERLING INVOICE 4/9/13 4/9/13 MILWAUKEE, WI 53214 4163073 INBOUND 1:25 pm 1:25 pm 162,500.00LBS Scale In **GROSS** CONTRACT: AH5196 TARE NET 52,500.00LBS Tare Out 110,000.00 LBS BOL: QTY DESCRIPTION UNIT ORIGIN % RATE TAX **TOTAL** 40.00 FY C&D BY YARD (Ext) WY 100.00 Total Paid I hereby certify that this load does not contain any unauthorized hazardous waste. Change Check# Recpt # SIGNATURE: **CUSTOMER COPY**

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

OPERATOR SITE CELL TICKET # 1231084 01 43967 LICENSE TRUCK CONTAINER TKMS004 REFERENCE IN OUT 4/9/13 4/9/13 4163074 2:54 pm 2:54 pm

GROSS 142,040.00LBS Scale In --i--CONTRACT: AH5296 TARE NET 52,720.00LBS Tare Out 89,320.00 LBS BOL: QTY UNIT DESCRIPTION **ORIGIN** % RATE TAX TOTAL Contaminated Soils (Ext) 44.66 TN WA 100.00

INVOICE

INBOUND

Total

Paid

Change

Check#

Recpt #

SIGNATURE:

I hereby certify that this load does not contain any unauthorized hazardous waste.

CUSTOMER COPY

ر (اا<u>نز</u>

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

CONTRACT: AH5296

SITE	CELL	TICKET #			OPERATOR		
01		1	231102		66750		
	TRUCK		CONTAINE	R	LICENSE		
Τ	KMS002						
	F	REFER	ENCE		IN	OUT	
416307	75	•			4/9/13 3:13 pm	4/9/13 3:13 pm	

INVOICE INBOUND

GROSS 151,120.00LBS Scale In

TARE 52,280.00LBS Tare Out

NET 98,840.00 LBS

BOL:			NET	98,840.00 LE	BS Tale Out		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
49.42	TN	Contaminated Soils (Ext)	WY	100.00			
· 	ł						
İ							
	ł						
:					Ì		

Total

Paid

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Check#

Recpt #

SIGNATURE:

I hereby certify that this load does not contain any unauthorized hazardous waste.

CUSTOMER COPY

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

[
SITE	CELL	TICKET #			OPERATOR		
01		1	231127		43967		
	TRUCK		CONTAINER		LICENSE		
T	KMS26*						
		REFER	ENCE		IN	оит	
416307	76				4/9/13 3:50 pm	4/9/13 3:50 pm	

GROSS 165,660.00LBS Scale In CONTRACT: AH5296 TARE NET 52,500.00LBS Tare Out 113,160.00LBS BOL: QTY UNIT DESCRIPTION RATE TOTAL ORIGIN % TAX TN Contaminated Soils (Ext) WY 56.58 100.00

INVOICE INBOUND

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

CELL TICKET # **OPERATOR** SITE 1231096 01 66750 LICENSE TRUCK CONTAINER HM121-30 IN OUT REFERENCE 4/9/13 4/9/13 4163077 3:06 pm 2:41 pm

GROSS 92,540.00LBS Scale In CONTRACT: AH5296 TARE NET 42,000.00LBS Scale Out 50,540.00 LBS BOL: QTY UNIT DESCRIPTION TOTAL **ORIGIN** % RATE TAX 25.27 Contaminated Soils (Ext) TN WY 100.00

INVOICE

INBOUND

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

					·	
SITE	CELL	TICKET #	+	OPERATO)R	
01		1231221		43967		
-	TRUCK	CONTAIN	ER	LICENSE		
T	KMS004				_	
	R	EFERENCE		IN	OUT	
416307	78			4/10/13 8:07 am	4/10/13 8:07 am	

GROSS 166,940.00LBS Scale In CONTRACT: AH5296 TARE NET 52,720.00LBS Tare Out 114,220.00LBS BOL: QTY UNIT DESCRIPTION % ORIGIN RATE TAX TOTAL 57.11 TN Contaminated Soils (Ext) WY 100.00

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE

			•					
SITE	CELL	1	ICKET #		OPERATOR			
01		1	231235		43967			
	TRUCK		CONTAIN	IER	LICENSE			
T	KMS002					- 		
REFERENCE					IN	ОИТ		
416307	79				4/10/13 8:20 am	4/10/13 8:20 ar		

CONTRACT: A	AH5296		GROSS TARE NET	159,220.00Li 52,280.00Li 106,940.00 L			
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
53.47	TN	Contaminated Soils (Ext)	WY	100.00			

Total

Paid

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Recpt #

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I hereby certify that this load does not contain any unauthorized hazardous waste.

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004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

SITE	CELL	TICKET #		OPERATOR			
01		1231247		66750			
·	TRUCK	RUCK CONTAINER			LICENSE		
Т	KMS26*						
	R	EFERENCE		IN	оит		
116308	30			4/10/13 8:40 am	4/10/13 8:40 an		

GROSS 158,620.00LBS Scale In CONTRACT: AH5296 TARE NET 52,500.00LBS Tare Out 106,120.00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN % RATE **TOTAL** TAX 53.06 TN Contaminated Soils (Ext) WY 100.00

INVOICE INBOUND

Total

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SIGNATURE:

I hereby certify that this load does not contain any unauthorized hazardous waste.

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004671 HM ENVIRONMENTAL (T) **42826 N WALNUT** MT CLEMENS, MI 48043

INVOICE INBOUND

SITE CELL TICKET #					OPERATOR		
01		1	231313		43967		
	TRUCK		CONTAIN	ER	R LICENSE		
T	KMS004						
REFERENCE					IN	ОЛТ	
416308	31				4/10/13 10:24 am	4/10/13 10:24 an	

CONTRACT: AH5296

BOL:

GROSS

151,540.00LBS Scale In

TARE NET

52,720.00LBS Tare Out 98,820.00 LBS

٠ ــ					30,020.00 LI	00		
	QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
_	49.41	TN	Contaminated Soils (Ext)	WA	100.00			
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I hereby certify that this load does not contain any unauthorized hazardous waste.

.004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

<u></u>	,			<u> </u>		,		
SITE	CELL	7	ICKET #	OPERATOR				
01		1	231324	66750				
	RUCK		CONTAINE	R	LICE	NSE		
Т	KM5002				<u> </u>			
		REFER	ENCE		IN	ОИТ		
416308	32	-			4/10/13 10:39 am	4/10/13 10:39 am		

CONTRACT: AH5296 BOL:		GROSS TARE NET	149,180.00LE 52,280.00LE 96,900.00 LI	3S Scale In 3S Tare Out BS		
QTY UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
48.45 TN	Contaminated Soils (Ext)	WY	100.00			

Total

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n) am

SIGNATURE:

I hereby certify that this load does not contain any unauthorized hazardous waste.

ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 TICKET # **OPERATOR** SITE CELL 2483497230 1231354 66750 01 LICENSE TRUCK CONTAINER 004671 TKMS26* HM ENVIRONMENTAL (T) **42826 N WALNUT** REFERENCE ΙΝ OUT MT CLEMENS, MI 48043 INVOICE 4/10/13 4/10/13 4163083 INBOUND 11:25 am 11:25 am **GROSS** 159,940.00LBS Scale In CONTRACT: AH5296 52,500.00LBS Tare Out 107,440.00 LBS TARE NET BOL: QTY DESCRIPTION UNIT **ORIGIN** RATE TAX TOTAL 53.72 TN Contaminated Soils (Ext) WY 100.00 Total Paid I hereby certify that this load does not contain any unauthorized hazardous waste. Change Check# Recpt # SIGNATURE: **CUSTOMER COPY**

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

				•		194.00.00
SITE	CELL	Т	ICKET #		OPERATO	R Ti.
01		1	231297		66750	
TRUCK			CONTAINE	R	VSE	
Н	M121-30					
		REFERI	ENCE		IN	оит
416308	34				4/10/13 10:05 am	4/10/13 10:05 am

GROSS 100,500.00LBS Scale In CONTRACT: AH5296 TARE NET 42,000.00LBS Tare Out 58,500.00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN RATE TAX TOTAL 29.25 Contaminated Soils (Ext) WY 100.00 TN

INVOICE INBOUND

I hereby certify that this load does not contain any unauthorized hazardous waste.

Change Check#

Total Paid

Recpt #

SIGNATURE:

CUSTOMER COPY

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

SITE	CELL	TICKET	#	OPERATO)R
01		12314	04	43967	
TRUCK		C	ONTAINER	LICE	NSE
HI	M121-30				
	R	EFERENCE		IN	оіл
416308	35			4/10/13 12:25 pm	4/10/13 12:25 pm

INVOICE INBOUND

	QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
	26.56	TN	Contaminated Soils (Ext)	WY	100.00		<u> </u>	
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ARBOR HILLS 10690 W SIX N NORTHVILLE,	AILE RD	R	EPRINT	SITE	CELL		ICKET #	_	0055	
2483497230				01	CELL		231409	-	OPERATO 43967	JK
					TRUCK		CON	TAINER	LICE	NSE
004671 HM:ENVIRONM	AFNTAL /T\			TKM5004						
42826 N WALN MT CLEMENS,	iut iii	•	,	REFERENCE					IN	OUT
HI CLEMENS,	FI 46043	INDI INDI	DUND	416308	16			· · · · · · · · · · · · · · · · · · ·	4/10/13 12:37 pm	4/10/13 12:37 pm
CONTRACT: A	ME208		GROSS		.900.001			****		
BOL:			TARE	\$2 75	,720.00L	85 Tai .85	e Out			
QTY	UNIT	DESCRIPTION						TAX	10	TAL
37.59	TN	Contaminated Solis (Ext)	WY		100.00		·			
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ARBOR HILLS		RE	PRINT	[·				- E		
10690 W SIX M NORTHVILLE, 1 2483497230	MR 48168			SITE	CELL	-	TICKET #		OPERATO	R
210317/230				01		1	1231428		43967	
					RUCK	<u>.</u>	CONTA	INER	LICE	V5E
004571 HM ENVIRONM	ENTAL (T)			T	KM5002					
42826 N WALN MT CLEMENS, I	UT .	INVO	tere			REFER	ENCE		IN	007
-		OGNI		416306	77				4/10/13 1:02 pm	4/10/13 1:02 pm
CONTRACT: A BOL;	H3296		GROSS TARE NET		,220.00 ,280.00 ,940.00	LBS SCI LBS Tel	ale In re Out			
QTY	UNIT	DESCRIPTION	ORIGI		96		ATE	TAX	TO	ral_
34.47	TN	Conteminated Solis (Ext)	WY		100.00					
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ARBOR HILLS LANDFILL	RE	PRINT								
10690 W SIX MILE RO NORTHYILLE, MI 48168 2483497230		1	SITE	CELT	7	ICKET #		OPERATO	A	
L 123191430			01		1	231455		66750		
				RUCK		CON	AINER	ER LICENSE		
004671 HM ENVIRONMENTAL (T)	•		T	KMS26*				_		
42826 N WALNUT MT CLEMENS, MI 48043	**************************************	100			REPER	ENCE		IN	QUT	
THE GEORGIA	INVOICE INSQUIND 4163088 4/10/13 2:01 pr									
CONTRACT: AH5296 BOL:		GROSS TARE		,920.001 ,500.001 ,420.00						
QTY UNIT	DESCRIPTION	ORIGI	V	₩.	R	ATE	TAX	TAX TOTAL		
49.21 TN	Contaminated Solis (Ext)	WY		100.00						
i hereby certify that this load do	ds not contain any unauthorized hazardous waste.		•		•		Total Paid Chang Check Recot	#	t COPY	

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REPRINT ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE MI 48168 SITE CELL TICKET # OPERATOR 2483497230 1231487 01 66790 CONTAINER TRUCK LICENSE 004671 TICM9004 HM ENVIRONMENTAL (T) **42826 N WALNUT** REFERENCE IN OUT MT CLEMENS, MI 48043 INVOICE 4/10/13 4/10/13 4163089 INBOUND 3:05 pm 3:05 pm GROSS 153,340.00LBS Scale In CONTRACT: AH5296 52,720.00L6S Tare Out 100,620.00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN RATE % TAX TOTAL 50.31 TN Contaminated Solis (Ext) WA 100.00 Total Paid I hereby certify that this load does not contain any unauthorized hazardous wasto. Change Check# Recot # **BIGNATURE:** CUSTOMER COPY

MILE RD										
MT 48168				SITE	CELL	7	TCKET #		OPERATO	R .
			1	01		1	231494		66750	
							CONT	AINER	LICE	NSE
MENTAL (T)					XM5002					
ML 48043		INVOICE		REFERENCE					IN	OUT
				416309	30				4/10/13 3:25 pm	4/10/13 3:25 pm
ÀH5296			GROSS TARE							
UNIT	DESCRIPTION				% %			TAX	то	ral .
TN	Conteminated Soils (Ext.)		WY		100.00					
at this load dos	s not contain any unauthorized hazardous	I waste.				•	,	Check	: #	: СОРҮ
	MENTAL (T) NUT MI 48043 AH5296 UNIT TN	MENTAL (T) NUT MI 48043 AHS296 UNIT DESCRIPTION TN Contaminated Solis (Ext) at this load does not contain any unauthorized hezardous	MENTAL (T) NUT MI 48043 INBOX AH5296 UNIT DESCRIPTION TN Contaminated Solis (Ext.) at this load does not contain any unauthorized heaprdous waste.	MENTAL (T) NUT MI 48043 AH5296 GROSS TARE NET UNIT DESCRIPTION ORIGIN TN Conteminated Solis (Ext.) WY At this load dees not contain any unauthorized hezordous waste.	MENTAL (T) NUT MI 48043 AH5296 AH5296 TARE 52 NET UNIT DESCRIPTION Contaminated 3oils (Ext.) WY At this load does not contain any unauthorized heaprious waste.	MENTAL (T) NUT MI 48043 AH5296 CROSS TARE 52, 280,001 NET P4,640.00 TNV Contaminated Soils (Ext) WY 100,00	MENTAL (T) NUT MI 48043 AHS296 AHS296 TARE F2 280,00LBS Tell NET F4,040,00 UBS TINE TRUCK TRMS002 REFER 4163090 AHS296 TARE F2 280,00LBS Tell NET F4,040,00 UBS TINE TIN Contaminated Solis (Ext) WY 100,00	MENTAL (T) NUT MI 48043 AH5296 AH5296 TARE TARE TARE TARE TARE TARE TARE TAR	MENTAL (T) NUT NIT 48043 AHS296 AHS296 AHS296 AHS296 TARE 52,280,00,BS Scale In TARE 94,040,00,BS Tare Out NET 94,040,00,BS Tare Out NET 94,040,00,BS Tare Out NET 94,040,00,BS Tare Out NET 94,040,00,BS Tare Out NET 94,040,00,BS Tare Out TARE 94,040,00,BS Tare Out NET 94,040,00,BS Tare Out TOTAL TIN Contaminated Solis (Ext) WY 100,00 Total Paid Chain Check Chain Check C	MENTAL (T) WIT MI 48043 ANSO2 TRUCK CONTAINER LICE TRUNCK CONTAINER LICE TRUCK CONTAINER TRUCK CONTAINER TRUCK CONTAINER TRUCK CONTAINER TRUCK CONTAINER TOTAL TOTAL TOTAL Paid Change C

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ARBOR HILLS LANDFILL 10690 W SIX MILE RD, NORTHVILLE, \ \ \ \ 1 48168 2483497230

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043 SITE TICKET # **OPERATOR** CELL 1231472 01 43967 TRUCK CONTAINER LICENSE HM121-30 REFERENCE IN OUT 4/10/13 4/10/13 4163091 2:36 pm 2:36 pm

INVOICE INBOUND

CONTRACT: A BOL:	H5296		GROSS TARE NET	RE 42,000.00LBS Tare Out						
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL			
25.64	TN	Contaminated Soils (Ext)	WY	100:00						
				•						

Total

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I hereby certify that this load does not contain any unauthorized hazardous waste.

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004671 HM:ENVIRONMENTAL (T) **42826 N WALNUT** MT CLEMENS, MI 48043

INVOICE INBOUND

			·	,					
SITE	CELL	т	ICKET #		OPERATO				
01		1	231587		66750				
	TRÚCK		CONTAINE	CONTAINER LI					
	OU572			;					
		REFER	ENCE		IN	ООТ			
416309	92				4/11/13 8:00 am	4/11/13 8:00 am			

90,400.00LBS Scale In **GROSS** CONTRACT: AH5296 TARE NET 42,520:00LBS Tare Out 47,880:00 LBS BOL: QTY UNIT DESCRIPTION RATE ORIGIN % TAX TOTAL 23.94 TN Contaminated Soils (Ext) WY 100.00

I hereby certify that this load does not contain any unauthorized hazardous waste.

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SIGNATURE:

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004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

				<u> </u>					
SITE	CELL	TICKET #			OPERATOR				
01		1	231592		66750				
TRUCK CONTAINER					LICENSE				
L	OU848								
REFERENCE					IN	олт			
4163093				4/11/13 8:14 am	4/11/13 8:14 am				

CONTRACT: AH5296

BOL:

GROSS

90,320.00LBS Scale In

TARE NET 41,280.00LBS Tare Out

DUL:			, NET	49,040.00 LE	35		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
24.52	TN	Contaminated Soils (Ext)	WY	100.00	-		
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ARBOR HILLS LA 10690 W SIX MI		R	EPRINT							
NORTHVILLE, MI 2483497230	1 48168	and the first of t		STIE CELL		TICKET #		OPERATOR		
004671 HM ENVIRONMENTAL (T)				01		1231609		66750		
				Ī	TRUCK	CONTAINER		LICENSE		
					LOU122		·			
42825 N WALNU	T i					REFERENCE			IN	OUT
MT CLEMENS, MI 48043		INBU INAU	OND	4163094				4/11/13 6:22 am	4/11/13 8:46 am	
CONTRACT: AH BOL:	5296		GROSS TARE NET			.BS Scale .BS Scale LBS				
Qπ	UNIT	DESCRIPTION	ORIGI	V	%	RATE TAX		TOTAL		
23.79	TN	Contaminated Soils (Ext)	WY		100.00					
nereby certify that I		es not contain any unauthorized hazardous wasta.				•		Total Paid Chan Ched Recpi	(# 9e	l COPY

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004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

SITE CELL TICKET # **OPERATOR** 1231602 66750 01 CONTAINER LICENSE TRUCK LOU371 REFERENCE IN OUT 4/11/13 4/11/13 4163095 8:34 am 8:34 am

INVOICE INBOUND

CONTRACT: AH5296

GROSS 94,780.00LBS Scale In

TARE 42,780.00LBS Tare Out

NET 52.000.001 BS

BOL:			NET	52,000.00 LE	3S		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
26.00	TN	Contaminated Soils (Ext)	WY	100.00			
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I hereby certify that this load does not contain any unauthorized hazardous waste.

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ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 **OPERATOR** SITE CELL TICKET # 2483497230 1231628 01 66750 LICENSE CONTAINER TRUCK 004671 LOU934-L HM ENVIRONMENTAL (T) 42826 N WALNUT REFERENCE IN OUT MT CLEMENS, MI 48043 INVOICE 4/11/13 4/11/13 4163096 **INBOUND** 9:21 am 9:21 am **GROSS** 90,460.00LBS Scale In CONTRACT: AH5296 TARE NET 42,160.00LBS Tare Out 48,300.00LBS BOL: QTY UNIT DESCRIPTION RATE TAX TOTAL ORIGIN % 24.15 TN Contaminated Soils (Ext) WY 100.00 Total Paid I hereby certify that this load does not contain any unauthorized hazardous waste. Change Check# Recpt # **CUSTOMER COPY SIGNATURE:**

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

TIX# 627372 CELL TICKET # **OPERATOR** SITE 1231634 66750 01 CONTAINER LICENSE TRUCK LOU837 REFERENCE IN OUT 4/11/13 4/11/13 4163097 9:31 am 9:31 am

INVOICE INBOUND

CONTRACT: AH5296

GROSS 92

92,560.00LBS Scale In

TARE NET 42,620.00LBS Tare Out

BOL:			NET	49,940.00 LE	3S		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
24.97	TN	Contaminated Soils (Ext)	WA	100,00			
			·	-			
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I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE: STEVQ

004671 HM'ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

SITE .	CELL	TICKET #	#	OPERATOR				
01		123165	6	66750				
	TRUCK	CO	NTAINER	LICENSE				
i	OU572							
	R	EFERENCE		IN	OUT			
4163098				4/11/13 10:02 am	4/11/13 10:02 am			

CONTRACT: AH5296

BOL:

GROSS 92,560.00LBS Scale In

TARE 42,520.00LBS Tare Out 50,040.00 LBS

			INE (30,040.00 L	DS		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
25.02	TN	Contaminated Soils (Ext)	WY	100.00			
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I hereby certify that this load does not contain any unauthorized hazardous waste.

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arbor Hills Landfill 10690 w Six Mile RD	•	REPRINT						
NORTHVILLE, MI 48168 248349723D		!	SITE	CELL	TICKET #		OPERAT	OR
, -, -,		•.	01		1231727		66750	_
004671			_	TRUCK OUB48	COX	TATNER	ua	NSE
MM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043					REFERÊNCE		NI	CUT
in activities) his senses		INBOUND INYOICE	416309	19			4/11/13 11:59 am	4/11/13 11:59 am
CONTRACT: AH5296 BOL:		GROSS TARE NET			BS Scale In BS Tare Out BS			
QTY UNIT	DESCRIPTION	ORIGI		96	RATE	TAX	π	TAL
26,67 TN	Contaminated Solls (Ext)	MA		100.00				
haraby cartily that this load do	es not contain any unauthorized hazardous waste.			1		Total Paid Chang Check Recpt	ge L#	RCOPY

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

		63	3813					
SITE	CELL		ICKET #		OPERATO	R		
01		1	231674		66750			
	TRUCK CONTAINER				LICENSE			
Ų	OU122							
-		REFERI	NCE		IN	оит		
416365	54				4/11/13 10:34 am	4/11/13 10:34 am		

CONTRACT: A	AH5296		GROSS TARE NET	99,220:00LI 43,000.00LI 56,220.00 L	BS Scale In BS Tare Out BS	2811	
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
28.11	TN	Contaminated Soils (Ext)	WY	100.00			

Total

Paid

Change

Check#

Recpt #

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I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

Dam

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

SITE CELL TICKET # **OPERATOR** 1231677 66750 01 CONTAINER LICENSE TRUCK LOU371 OUT REFERENCE IN 4/11/13 4/11/13 4163655 10:40 am 10:40 am

INVOICE INBOUND

CONTRACT: AH5296

BOL:

GROSS 95,440.00LBS Scale In
TARE 42,780.00LBS Tare Out
NET 52,660.00 LBS

				D=/000.00 EE	,		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
26.33	TN	Contaminated Soils (Ext)	WY	100.00			
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Total

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I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

Lous' 632717

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

SITE					OPERATOR			
01		1	231705		66750			
	TRUCK CONTAINER				LICENSE			
LC	OU934-L							
	F	REFER	ENCE		IN	OUT		
416365	56				4/11/13 11:29 am	4/11/13 11:29 am		

GROSS 99,700.00LBS Scale In CONTRACT: AH5296 TARE NET 42,160.00LBS Tare Out 57,540.00 LBS BOL: QTY DESCRIPTION UNIT **ORIGIN** % RATE TAX TOTAL 28.77 Contaminated Soils (Ext) 100.00 TN WY

Total

Paid

Change

Check#

Recpt #

SIGNATURE:

I hereby certify that this load does not contain any unauthorized hazardous waste.

CUSTOMER COPY

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

	7 V	# 6	27373					
SITE	CELL	T	ICKET #	OPERATO	DR .			
_{a'} 01		1	231712	66750	66750			
· ·	TRUCK		CONTAINER	LICE	NSE			
ī	OU837		 !					
	R	EFER	ENCE	IN	OUT			
41616	57	•		4/11/13 11:39 am	4/11/13 11:39 am			

INVOICE INBOUND

GROSS 102,100.00LBS Scale In CONTRACT: AH5296 TARE 42,620.00LBS Tare Out 59,480.00LBS BOL: QTY UNIT DESCRIPTION RATE TOTAL. ORIGIN % TAX 29.74 TN 100.00 Contaminated Soils (Ext)

Total

Paid

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Recpt #

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I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

Charles

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

TICKET # CELL SITE **OPERATOR** 1231728 01 66750 CONTAINER LICENSE TRUCK LOU572 OUT REFERENCE IN 4/11/13 4/11/13 4163658 12:00 pm 12:00 pm

INVOICE INBOUND

99,040.00LBS Scale In **GROSS** CONTRACT: AH5296 TARE NET 42,520.00LBS Tare Out 56,520.00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN % RATE TOTAL TAX TN Contaminated Soils (Ext) 100.00 28.26 WY

Total

Paid

Change

Check#

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SIGNATURE: ____

I hereby certify that this load does not contain any unauthorized hazardous waste.

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004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

633874 SITE CELL TICKET # **OPERATOR** 1231759 01 66750 CONTAINER LICENSE TRUCK LOU122 REFERENCE IN OUT 4/11/13 4/11/13 4163659 12:45 pm 12:45 pm

INVOICE INBOUND

98,780.00LBS Scale In **GROSS** CONTRACT: AH5296 43,000.00LBS Tare Out 55,780.00 LBS TARE NET BOL: QTY RATE UNIT DESCRIPTION ORIGIN % **TOTAL** TAX 27.89 Contaminated Soils (Ext) TN WY 100.00

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

CELL TICKET # **OPERATOR** SITE 1231764 01 66750 LICENSE TRUCK CONTAINER LOU371 REFERENCE IN OUT 4/11/13 4/11/13 4163660 12:50 pm 12:50 pm

INVOICE INBOUND

GROSS 100,860.00LBS Scale In CONTRACT: AH5296 TARE NET 42,780.00LBS Tare Out 58,080.00 LBS BOL: QTY UNIT DESCRIPTION **ORIGIN** % RATE TOTAL TAX 29:04 TN Contaminated Soils (Ext) WY 100.00

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

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004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

INVOICE INBOUND

SITE	CELL	П	CKET #		OPERATO	R		
01		1231783			66750			
	TRUCK CONTAINER				LICENSE			
L	OU934-L							
	R	EFERE	NCE	•	IN	OUT		
4163661					4/11/13 1:31 pm	4/11/13 1:31 pm		

CONTRACT: AH5296

' BOL:

GROSS 103,000.00LBS Scale In

TARE 42,160.00LBS Tare Out
60,840.00 LBS

			L INCI	00,040.0011	35		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
30.42	TN	Contaminated Soils (Ext)	WY	100.00			
			·				
						1	
				-			
			·				
	ļ	1					

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

ARBOR HILLS 10690 W SIX I NORTHVILLE,	VILE RD	R	eprint	SITE	CBLL	7	TCKET #		OPERATO	R
2483497230				01		1	231790		43967	
					TRUCK		CONT	AINER	LICE	VSE
004671 HM ENVIRONI					OU837					
42826 N WALF		INVC	NCE			REFER	ENCE		IN	OUT
		INBO		41636	32				4/11/13 1:43 pm	4/11/13 1:43 pm
CONTRACT: /	NH5296		GROSS TARE NET	_	,600.00L ,620.00L					
QΤΥ	UNIT	DESCRIPTION	ORIGI		96		ATE	TAX	TOT	ral.
27,49	TW .	Contaminated Solls (Ext)	WY	,	100.00					
i haraby cardly thi SIGNATURI		s not complin any unquitrorized hazardous w ર્કાર .						Tutal Paid Chang Check Recpt	#	COPY

SIGNATURE:_

004671 HM ENVIRONMENTAL (Ť) 42826:N WALNUT MT CLEMENS, MI 48043

SITE CELL TICKET # **OPERATOR** 1231794 66750 01 TRUCK CONTAINER LICENSE LOU572 REFERENCE IN OUT 4/11/13 4/11/13 416.663 1:49 pm 1:49 pm

INVOICE INBOUND

GROSS 99,980.00LBS Scale In CONTRACT: AH5296 42,520.00LBS Tare Out 57,460.00 LBS TARE NET BOL: QTY UNIT DESCRIPTION **ORIGIN** RATE TAX TOTAL 28.73 TN Contaminated Soils (Ext) WY 100.00

Total

Paid

Change

Check#

Recpt #

SIGNATURE:

I hereby certify that this load does not contain any unauthorized hazardous waste.

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ARBOR HIULS L	ANDFILL	RE	PRINT							
10690 W SIX M NORTHVILLE, M 2483497230			}	SITE	CELL	TIC	KET #		OPERATO	R
G-103737230				01		127	1824		66750	
					TRUCK		CONTAI	NER	LICE	NSE
004671 HM ENVIRONM	ENTAL (T)		1	1	100135					
42826 N WALNI MT CLEMENS, N	יונ	TANKA				REFEREN	Œ.		IN	סטד
	, .,,,,,,	INBOI		41636	34				4/11/13 2:50 pm	4/11/13 2:50 pm
CONTRACT; AI BOL:	H5296		GROSS TARE NET			.85 Scale .85 Tare LBS				
אנס	UNIT	DESCRIPTION	ORLGIA	1	%	RAT	E	TAX	יסד	TAL
29.09	TN	Conteminated Solis (Ext)	WY		190.00					
I hereby certify that	thin load abe	s not contain any unauthorized hezardous waste.						Total Paid Chang Check Recpt	#	
SIGNATURE:								•	CUSTOMER	COPY

7760414701007-										
EIGNATURE: ARBOR HILLS LA			eprint				· ·	T-		
10690 W SIX MI NORTHVILLE MI	LE RD	•	C.F. ICATAL	SETE	CELL	тю	KET #	+	OPERATO)R
2483497230				01		12	1830	+	66750	
004871 HM ENVIRONME	MTAL (T)	•	•		RUCK OU371		CONTAI	VER	LIĆE	NSE
42826 N WALNU MT CLEMENS, M	T	INVO				REPEREN	CE		IN	OUT
		INBC	UND	416366	i6 				4/11/13 2:57 pm	4/11/13 2:57 pm
CONTRACT: AH BOL:	5298		GROSS TARE NET	_		LOS Scale LOS Tare LOS				
QTY	UNIT	DESCRIPTION	ORIGI	N	.96	RAT	E	TAX	TOT	ΓAL
30.78	TN	Contaminated Soils (Ext)	wy		100.00	·				
leraby cartify that the standard track track the standard track track the standard track trac	his load dees	r nat contain any unau thorizad hazardous Yest a.				•	·	Total Pald Chang Check Recpt	¥	COPY

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VRBOR HILLS L	ANDFILL		REPRINT					T			
10690 W STX M NORTHVILLE, M 1483497230				SITE	CELL		TICKET #			OPERATOR	₹
- 100797804				01		1	1231837			66790	
04671 NA CANTOONIA	Partal CT1			_	TRUCK QU934-L		CONT	AINER	\dashv	LICEN	SE
IM ENVIRONM 2826 N WALN IT CLEMENS, 1	UT i	• • • • • • • • • • • • • • • • • • •	VOICE		*****	REFER	RENCE		二	IN	OUT
,			BOUND	41636	67					4/11/13 3:25 pm	4/11/13 3:25 pm
CONTRACT: A GOL:	H5296		GROS: TARI NE		1,620.00L 2,160.00L 3,460.001						
QTY	UNIT	DESCRIPTION	ORIG		%	_	RATE	7/	AX.	T01	AL
29.73	TN	Contaminated Solls (Ext)	w		100.00						
by certify tha	t this load co	se not contain any unauthorized hazardous waste.	 .				·····	P C	otel rald hange hecké	•	

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ARBOR HILLS LANDFILL 10690 W SIX MRUR 8D NORTHYPLIE, M 48166 2483497230 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 O1 1231848 66750 ONTAINER LICENSE IN OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT ON OUT ALBERT OUT ALBERT ON OUT ALB			-								
O04671 IMM ENVIRONMENTAL (T) 42926 N WALAUT MT CLEMENS, MI 48043 INVOICE INBOUND GROSS GROSS GROSS S9,060,00L89 Scale In TARE 42,520,00L85 Tere Out S6,340,00L85 OTY UNIT DESCRIPTION ORIGIN % RATE TAX TOTAL Total Nereby Certify that this load does not contain any unauthorized hazardous wasto. Thereby certify that this load does not contain any unauthorized hazardous wasto.	10690 W SIX MILE R NORTHVILLE, MI 481	D	Rí	EPRINT		CELL					
BOL: TARE NET 56,340.00 LBS QTY UNIT DESCRIPTION ORIGIN % RATE TAX TOTAL 28.27 TN Contaminated Soils (Ext) WY 100.00 Total Paid I heraby contry that this load does not contain any unauthorized hazardous wissto. Thereby Contry that this load does not contain any unauthorized hazardous wissto.	HM ENVIRONMENTAL 42826 N WALNUT	-				OU572		CON	TAINER	IN 4/11/13	OUT 4/11/13
Total Paid Therapy Cartily that this load does not contain any unauthorized hazardous wasto. Total Paid Change Check# Recpt #	BOL:	3									
Total Pald Pald Charaby Cardify that this load does not contain any unauthorized hazardous waste. Change Check# Recpt #	אט און	IT	DESCRIPTION	ORIGI	4	%	A	ZATE	TAX	TO	TAL
Poid therapy contrive that this load does not contain any unauthorized hazardous waste. Change Check# Recpt #	28.27	TN .	Contaminated Solis (Ext)	WY		100.00					
		ad does	s not contain any unauthorized hazardous waste.						Pald Chan Check Recpt	<# : #	l COPY

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

TK#632147 OPERATOR TICKET # SITE CELL 1232021 66750 01 LICENSE TRUCK CONTAINER LOU837 REFERENCE ΙN OUT 4/12/13 4/12/13 4163015 10:30 am 10:30 am

100,320.00LBS Scale In **GROSS** CONTRACT: AH5296 TARE NET 42,620.00LBS Tare Out 57,700.00 LBS BOL: QTY UNIT DESCRIPTION **ORIGIN** % RATE TAX **TOTAL** Contaminated Soils (Ext) 28.85 WY 100.00 TN

INVOICE

INBOUND

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

REPRINT ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MT 48168 SITE CELL TICKET # OPERATOR 2483497230 1232037 43967 01 CONTAINER LICENSE TRUCK 004571 TKMS22L HM ENVIRONMENTAL (T) 42826 N WALNUT REFERENCE IN OUT MT CLEMENS, MJ 48043 INVOICE 4/12/13 4/12/13 4153016 INBOUND 10:57 am 10:57 am GROSS 91,600.00LBS Scale In CONTRACT: AH5296 34,500.00LBS Tare Out 57,100.00LBS BOL: DESCRIPTION UNIT ORIGIN QTY . 96 RATE TOTAL TAX Z Contaminated Soils (Ext) 28.55 W 100.00 Total Paid I hereby certify that this losd does not contain any unauthorized hazardous waste. Change Check# Recpt # SIGNATURE: CUSTOMER COPY

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

SITE	CELL	TICKET #	OPERATO	OR
01		1232030	66750)
	TRUCK	CONTAINER	LICE	NSE
ı	OU215			
_	F	EFERENCE	IN	OUT
4163017		,	4/12/13 10:46 am	4/12/13 10:46 am

INVOICE INBOUND

CONTRACT: AH5 BOL:	5296		TARE	93,240.00 LE 42,900.00 LE 50,340.00 LE	3S Tare Out		
QTY ι	JNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
25.17 1	ΓN	Contaminated Soils (Ext)	WY	100.00			1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

I hereby certify that this load does not contain any unauthorized hazardous waste.

County Fee
ENVIRONMENTAL FEE
FUEL FEE
MDEQ SURCHARGE - TON
Township Fee

Tax Total Total \$4.91 Paid \$6.54 Change \$13.22 Check# \$9.06 Recpt #

SIGNATURE:

FACILITY COPY

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

	Loru		CVET #		07-01-70	\			
SITE	CELL TICKET #				OPERATO	Ж 			
01	1 1	12	232045		66750	750			
	TRUCK	\Box	CONTAINE	R	LICE	NSE			
1	TKMS53								
	F	REFERE	NCE		IN	ОЛТ			
416301	18				4/12/13 11:06 am	4/12/13 11:06 am			

INVOICE INBOUND

CONTRACT: BOL:	AH5296		GROSS TARE NET		.BS Scale In .BS Tare Out .BS			est la
QTY	UNIT	DESCRIPTION	ORIGIN	- %	RATE	TAX	TOTAL	
20.32	TN	Contaminated Soils (Ext)	WY	100.00				

I hereby certify that this load does not contain any unauthorized hazardous waste.

Tax Total Total \$3.96 County Fee Paid **ENVIRONMENTAL FEE** \$5.28 Change FUEL FEE \$10.67 Check# MDEQ SURCHARGE - TON \$7.32 Recpt # \$3.63 Township Fee

SIGNATURE:

FACILITY COPY

ARBOR HILLS		RE	PRINT							
10890 W SIX N NORTHVILLE, I 2483497230				SITE	CELL	T	ICKET #		OPERATO	OR
C703437 Z3U				01		1	232067		43987	
					TRUCK		CONTAIN	R	rice	NSE
004671 MM Environn	MENTAL (T)			(OU571					
42836 N WALK MT CLEMENS.	iUT `				_	REPERA	NCE		IN	OUT
FIT OFBARNS	MI -TOP-TS	INBO:		41630	20	· · · ·			4/12/13 11:38 am	4/12/13 11:38 am
CONTRACT.	urane		GROSS	89	,560.00	B\$ Sca	ile In			
CONTRACT: A	RM5298		TARE	43 46	,500.00 ,080.00	.85 Ter Løs	e Out			
QTY	UNIT	DESCRIPTION	ORIGI		%		ATE	TAX	ΤQ	TAL
23.03	TN	Contaminated Solis (Ext)	WY		100.00					
(hareby cortily the		is not contain any unsutherized hazardous waste.						Total Paid Chan Checi Racpt	K#	R COPY

ARBOR HILLS		·	EPRINT					1		
10690 W STX N NORTHVILLE, 1 2483497230		,		SITE	CELL	7	ICKET #		OPERATO	R
2.007,000				01		1	232099		66750	
					TRUCK		CONTA	THER	UCE	vse
004671 HM ENVIRONM	IENTAL (T)			{}	LOU837					
42826 N WALN MT CLEMENS,		PAR	OICE			REFER	ENCE		IN	OUT
			OUND	41630	21				4/12/13 12:31 gm	4/12/13 12:31 pm
CONTRACT: A BOL:	H5296		GROSS TARE NET		,520.00 ,620.00 ,900.00					
qıv	UNIT	DESCRIPTION	ORIGI		% %		ATE	TAX	10	TAL
26.95	TN	Conteminated Soils (Ext)	WA		100,00					<u></u>
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1	}	·		•		}			}	
	h		<u> </u>			ļ		Total		
ereby certify that	t this land do	es not contain any unputhertage hazardous waste,						Pald Chang	**	
								Check		
								Recpt		_
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ARBOR HILLS		RI	EPRINT							
NORTHVILLE, (2483497230	MI 49168			SITE	CELL	TIC	CKET #		OPERATO	R
				01		12	32116		66750	
004671					RUCK OU215		CONTA	INER	UCE	NSE
HM ENVIRONM 42826 N WALN	ur ``					REFEREN	WC G		IN:	OUT:
MT CLEMENS,	MI 48043	oeni Oeni		41630		KEICKEI	VC4.		4/12/13 12:53 pm	4/12/13 12:53 pm
CONTRACT: A	H5296		GROSS TARE NET			BS Scale BS Tare BS				
QΤΥ	דנאני	DESCRIPTION	ORIGI		%	RAT		TAX	TO	TAL
25.09	TN	Contaminated Solis (Ext)	WY		190.00					
i hereby certify that , SIGNATURE		e not contain any unauthorized hazardous waste.			·		·	Total Paid Chang Chack Recpt	#	COPY

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LANDFILL MILE RD MI 48168		REPRINT	SITE	CETT	TICKET #		OPERATI	ir.
			01		1232125		43967	
					CON	TAINER	LICE	NSB
MENTAL (T)			<u> </u>		REFERENCE		IN	OUT
MI 48043		INVOICE	416302				4/12/13 1:06 pm	4/12/13 1:08 pm
NH5296		GROSS TARE NET						
UNIT	DESCRIPTION			%	RATE	TAX	Τ0	TAL
TN	Contaminated Solls (Ext)	· WY		100.00				
it this load dos	rs hat contain any unauthorized hazardor,	is waste.		······································		Check	#	
	LANDFILL MILE RD MI 48168 MENTAL (T) WUT MI 48043 AH5296 UNIT	LANDFILL MILE RD MI 48168 MENTAL (T) WUT MI 48043 AM5296 UNIT DESCRIPTION TN Conterminated Solls (Ext) At this load does not contain any unouthorized hazardon	LANDFILL MILE RD MI 48168 AENTAL (T) WIT MI 48043 INVOICE INBOUND AM5296 CROSS TARE NET UNIT Contaminated Soils (Ext) WY At this load does not contain any unauthorized hazardous waste.	ARENTAL (T) WIT MI 48043 AND SITE OI ARENTAL (T) WIT MI 48043 AND SITE OI INVOICE INBOUND AND SITE OI OI ORIGIN TN Contaminated Soils (Ext) WY ARE SITE OI ORIGIN TO Contaminated Soils (Ext)	ARNOFILL MILE RD MI 48168 ARNTAL (T) RUT MI 48043 INVOICE INSOUND ANSZ22 ANSZ26 A	REPRINT SITE CELL TICKET # O1 12321.25 TRUCK CON TRMS22 REFERENCE 4163023 AMS296 GROSS 106,220.00LBS Scale In S1,840.00 LBS TARE S3,380.00.85 Tore Out NET DESCRIPTION ORIGIN % RATE TN Contaminated Soils (Ext) WY 100.00	ARENTAL (T) WILL 48043 ARENTAL (T) WILL 48043 ARENTAL (T) WILL 48043 INVOICE INBOUND AREFERENCE 4163023 ARES296 GROSS GROSS 106,220,00LBS Scale In S3,380,00LBS Tore Out S7,940,00LBS TARE S7,940,00LBS TARE TYPE TOTAL TOTAL TOTAL TOTAL TOTAL TOTAL TOTAL Peld Chang Check Chang Check Chang Check	LANDFILL MILE RD MIL 48169 MENTAL (T) MIL 48043 INVOICE INBOUND MISSORIPTION Contaminated Soils (Ext) REPRINT SITE CELL TICKET # OPERATO TRUCK CONTAINER LICE TRMS22 REFERENCE IN MIL 48043 MIL 48043 INVOICE INBOUND TARE S3,380,00185 Tare Out S2,840,00 LBS Tare S3,380,00185 Tare Out S2,840,00 LBS TARE S3,380,00185 Tare Out S2,840,00 LBS TOTO TN Contaminated Soils (Ext) WY 100.00 Total Paid Change Checks

FIGNATURE:	 								
ARBOR: HTLLS LANDFILL 10690 W SIX:MILE RD		REPRINT			~ <u></u>				
NORTHVILLE, MI 48168 2483497230			SITE	CELL	TICK	i #		OPERATO	R
2443777630			01		1232	136		66750	
		ı	-	RUCK		CONTA	INER	LICEN	SE
004671 HM ENVIRONMENTAL (1	ר		TK	MS83-L					
42826 N WALNUT MT CLEMENS, MI 4804	· ·	IAM MATER			referenci	E		IN	OUT
المهار مرا زوداداد		inbound	416305	8				4/12/13 1:21 pm	4/12/13 1:21 pm
CONTRACT: AH5296 BOL:		GROSS TARE NET			BS Scale In BS Tare Or BS				
TIMU YTG	DESCRIPTION	ORIGI	N	%	RATE		TAX	TOT	ral.
33.76 TN	Conteminated Solla (Ext)	·		100.00					
I hareby certify that this load SIGNATURE:	dogs not contain any unauthorized hazordous wast	te.					Total Pald Chang Checks Recpt	8	соғу
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SIGNATURE:			• • • • • • • • • • • • • • • • • • •	r			4		FACILITY	DUPT
ARBOR HILLS:L 10690 W 5IX M NORTHVILLE, N	ILE RD	•	REPRINT	SITE	CELL	T	TICKET #		OPERATOR	
2483497230				01		1	291927		43967	
				-	TRUCK		CONT	AJNER	LICE	VSE
004671 HM ENVIRONM					.OU571					
42826 N WALNI MT CLEMENS, N		tan	OICE	İ		REFER	NCE		IN	OUT
	.2 10019		COUND	416305	59				4/12/13 8:16 am	4/12/13 8:16 am
CONTRACT: AI	15296		GROSS TARE		,240.00L ,500.00L ,740.00					
QTY	UNIT	DESCRIPTION	ORIGI	N	%	R	ATE	TAX	то	TAL
30.87	TN	Contaminated Solis (Ext)	WY		100.00		·			
i hareby certify that	thin load do	es not contain any unauthorizad hazardous waste.			- 1			Total Paid Chan Check Recot	; #	
SIGNATURE			-						CUSTOMER	COPY

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ARBOR HILLS 10690 W SIX I NORTHVILLE, 2483497230	MILE RO		RE	PRINT	SITE	ŒLL		CKET #		OPERATO)R
					01		12	31954	1	43967	
004474						RUCK		CONT	LINER	nce	NSE
004671 HM ENVIRONA					L	OU804					,
42826 N WALA MT CLEMENS,			INVO	·~=			REFERE	NCE		IN	our
			INBO		416306	0				4/12/13 8:55 am	4/12/13 8:55 am
CONTRACT: /	AH5296			GROSS TARE NET			.BS Scale .BS Tare LBS				
QTY	UNIT	DESCRIPTION		ORIGI		96	RA		TAX	TO	TAL
27.61	TN	Contaminated Solls (Ext)		W		100,00					
horaby certily th	et this load doc	is not contain any unauthorized hazardous wast	N2.						Total Pald Chang Check Recpt	•	
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:	ARBOR HILLS I	ile rd		REPRINT		1.					
,	NORTHVILLE, 1 2483497230	41 4819B			SITE	CELL	TICKET 4 1231935			OPERATO	ą
i					01	TRUCK	<u>i.</u>	NTAINER	,	43967 LICE	USP
	004671 HM ENVIRONM	FNITAL /T)				OU837		14 1 1 1 1 1 1			***
	42826 N WALN MT CLEMENS, I	UT ii		INVOICE			REFERENCE			IN	OUT
	The make talling o			INBOUND	416300	51				4/12/13 8:24 am	4/12/13 8:24 am
	CONTRACT: A	H5296		GROSS			LBS Scale in				
	QTY	UNIT	DESCRIPTION	TARE		%800.00 %	LBS Tare Out LBS RATE	1 1	AX	TO	FAL
	29.90	TN	Contaminated Soile (Ext)	wr		100.00		 			
		·									
							ļ				
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									Total		
	l hereby cortify that	this lood doe	es not contain any unauthorized hazardous v	waste.				(Paid Chang		
									Check Recot		
	Signature	l							·	CUSTOMER	COPY

004671 HM ENVIRONMENTAL (T) 42826 N'WALNUT MT CLEMENS, MI 48043 628759

INVOICE INBOUND

SITE	CELL	7	TCKET #		OPERATOR					
01		1	231943	43 66750						
TRUCK			CONTAIN	ER	LICENSE					
Т	KMS22L									
-		REFER	ENCE		IN	оит				
416306	52				4/12/13 8:36 am	4/12/13 8:36 am				

CONTRACT: BOL:			GROSS TARE NET	94,780.00 LE 34,500.00 LE 60,280.00 LE	S Tare Out		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
30.14	TN	Contaminated Soils (Ext)	WY	100.00			THE PERSON NAMED IN PARTY NAMED IN P
I hereby certify that		es not contain any unauthorized hazardous waste.	County Fee ENVIRONMENT/ FUEL FEE MDEQ SURCHAF Township Fee		Tax Total \$5.88 \$7.84 \$15.83 \$10.85 \$5.39	Total Paid Change Check# Recpt #	ACILITY COPY

DFILL RD 48168 TAL (T)	INVO	i PRINT	_	CELL RUCK OU215		ICKET # 291940 CONTA	INER	OPERATO 43967 LICE	
4816B TAL (T)		tce	01	RUCK		231940	INER	43967	
• •		îce		سننشنب	1		INER	·	
• •		tce	_	سننشنب		CONTA	NER	LICE	VSE
• •		tce		OU215					
		ice	l						
				·	REFERI	NCE		EN	OUT
			416306	13				4/12/13 6:32 am	4/12/13 8:32 am
296		GROSS TARE							
UNIT	DESCRIPTION	ORIGI	4	%	R	ATE	TAX	то	TAL
W	Contaminated Solls (Ext)	WY		100.00					
iş iqad dosi	s not contain any unauthoroted hazardous waste,					+	Check Recot	#	COPY
	INTT TN	INIT DESCRIPTION	TARE NET NET NET NET NET NET NET NET NET NE	TARE 42 NET SS INIT DESCRIPTION ORIGIN TN Contaminated Soils (Ext) WY	TARE 42,900.00 NET 55,980.00 INIT DESCRIPTION ORIGIN % TN Conterminated Solia (Ext.) WY 100.00	TARE 42,900,001.89 Ten NET 55,980.001.89 INIT DESCRIPTION ORIGIN % R/ TN Contaminated Soils (Ext) WY 100.00	TARE 42,900,001.BS Tare Out NET 55,980.00 LB9 INIT DESCRIPTION ORIGIN % RATE TN Contaminated Solia (Ext) WY 100.00	TARE 42,900,00LBS Tare Out NET 55,980.00LBS INIT DESCRIPTION ORIGIN % RATE TAX TN Contaminated Solia (Ext) WY 100.00 Total Peku Inauthorized hazardous waste. Check Record	TARE 42,900,001.B9 Tare Out NET 55,980.00 L89 INIT DESCRIPTION ORIGIN % RATE TAX TO TO Contentinated Solia (Ext.) WY 100.00 Total Peld

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

SITE CELL TICKET # **OPERATOR** 1231950 01 66750 LICENSE TRUCK CONTAINER TKMS53-L REFERENCE IN OUT 4/12/13 4/12/13 4163064 8:47 am 8:47 am

INVOICE INBOUND

CONTRACT: BOL:	AH5296		GROSS TARE NET	99,660.00 LE 42,760.00 LE 56,900.00 LE	S Tare Out		
QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
28,45	TN	Contaminated Soils (Ext)	WY	100.00			10600

I hereby certify that this load does not contain any unauthorized hazardous waste.

Tax Total Total \$5.55 County Fee Paid **ENVIRONMENTAL FEE** \$7.40 Change **FUEL FEE** \$14.94 Check# **MDEQ SURCHARGE - TON** \$10.24 Recpt # Township Fee \$5.09

SIGNATURE:

FACILITY COPY

ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 SITE CELL TICKET # **OPERATOR** 2483497230 1233362 01 40219 CONTAINER LICENSE TRUCK 004671 HM109-20M HM ENVIRONMENTAL (T) **42826 N WALNUT** REFERENCE IN OUT MT CLEMENS, MI 48043 INVOICE 4/17/13 4/17/13 4163024 INBOUND 8:50 am 8:50 am GROSS 104,180.00LBS Scale In CONTRACT: AH5296 43,140.00LBS Tare Out 61,040.00 LBS TARE NET BOL: QTY DESCRIPTION UNIT **ORIGIN** % RATE TAX TOTAL 30.52 Contaminated Soils (Ext) TN WY 100.00 Total Paid I hereby certify that this load does not contain any unauthorized hazardous waste. Change Check# Recpt # **CUSTOMER COPY SIGNATURE:**

ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 SITE CELL TICKET # 2483497230 1233451 01 4021: CONTAINER LICENSE TRUCK 004671 HM109-20M HM ENVIRONMENTAL (T) **42826 N WALNUT** REFERENCE IN OUT MT CLEMENS, MI 48043 INVOICE 4/17/13 4/17/13 4163025 **INBOUND** 11:05 am 11:05 am **GROSS** 104,120.00LBS Scale In CONTRACT: AH5296 43,140.00LBS Tare Out 60,980.00 LBS TARE NET BOL: QTY UNIT DESCRIPTION ORIGIN RATE TAX TOTAL Contaminated Soils (Ext) 30.49 TN WY 100.00 Total Paid I hereby certify that this load does not contain any upauthorized hazardous waste. Change Check# Recpt # SIGNATURE: **CUSTOMER COPY**

4. 1

ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 CELL TICKET # **OPERATOR** SITE 2483497230 1233568 01 40219 LICENSE TRUCK CONTAINER 004671 HM109-20M HM ENVIRONMENTAL (T) **42826 N WALNUT** REFERENCE IN OUT MT CLEMENS, MI 48043 INVOICE 4/17/13 4/17/13 4163026 INBOUND 1:29 pm 1:29 pm 103,320.00LBS Scale In **GROSS** CONTRACT: AH5296 TARE NET 43,140.00LBS Tare Out 60,180.00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN % RATE TAX TOTAL 30.09 ΤŃ Contaminated Soils (Ext) WY 100.00 Total Paid I hereby certify that this load does not contain-any-unauthorized hazardous waste. Change Check# Recpt # **CUSTOMER COPY** SIGNATURE:

ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 2483497230

004671 HM ENVIRONMENTAL (T) 42826 N WAENUT MT CLEMENS, MI 48043

INVOICE INBOUND

				T					
SITE	CELL	TICKET #			OPERATOR				
01		1	.233612		40219				
TRUCK		CONTAINER		LICE	NSE				
Н	1124-20		,						
		REFER	ENCE		IN	ОИТ			
416302	27				4/17/13 2:08 pm	4/17/13 2:08 pm			

GROSS 99,540.00LBS Scale In CONTRACT: AH5296 TARE NET 42,820.00LBS Tare Out 56,720:00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN % RATE TAX TOTAL 28.36 Contaminated Soils (Ext) TN WY 100.00

I hereby certify that this load does not contain any unauthorized hazardous waste.

SIGNATURE:

Total

Paid

Change

Check#

Recpt #

CUSTOMER COPY

ARBOR HILLS LANDFILL 10690 W SIX MILE RD **NORTHVILLE, MI 48168** SITE CELL TICKET # **OPERATOR** 2483497230 1233667 01 40219 TRUCK CONTAINER LICENSE 004671 HM109-20M HM ENVIRONMENTAL (T) **42826 N WALNUT** REFERENCE IN OUT MT CLEMENS, MI 48043 INVOICE 4/17/13 4/17/13 4163028 INBOUND 3:32 pm 3:32 pm GROSS 96,560.00LBS Scale In CONTRACT: AH5296 TARE NET 43,140.00LBS Tare Out 53,420.00 LBS BOL: QTY UNIT DESCRIPTION ORIGIN % RATE TAX TOTAL Contaminated Soils (Ext) 26.71 TN WY 100:00 Total Paid I hereby certify that this load does not contain any unauthorized hazardous waste. Change Check# Recpt # **SIGNATURE: CUSTOMER COPY**

ARBOR HILLS LANDFILL 10690 W SIX MILE RD NORTHVILLE, MI 48168 2483497230

004671 HM ENVIRONMENTAL (T) 42826 N WALNUT MT CLEMENS, MI 48043

SITE CELL TICKET # OPERATOR 1233681 01 40219 LICENSE TRUCK CONTAINER HM124-20 REFERENCE IN OUT 4/17/13 4/17/13 4163029 4:00 pm 4:00 pm

INVOICE INBOUND

CONTRACT: AH5296 BOL: GROSS 103,880.00LBS Scale In
TARE 42,820.00LBS Tare Out
NET 61.060.00 PRS

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QTY	UNIT	DESCRIPTION	ORIGIN	%	RATE	TAX	TOTAL
30.53	TN	Contaminated Soils (Ext)	WY	100.00			
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I hereby certify that this load does not contain any unauthorized hazardous waster

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CONCRETE DISPOSAL DOCUMENTATION

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WATER DISPOSAL MANIFESTS

Pla	ease print o	r type. (Form desig	ned for use on elite (1:	2-pitch) typewriter.)					Form	Approved.	OMB No. 2	2050-003
1		M HAZARDOUS E MANIFEST	1. Generator ID Number	2091844	2. Page 1 of	3. Emergency Resp 216-982-62		4 Manifest		391	9 J.	JK
	124 (21	EVELAND O	RD THISTREET RM H 48207	2179		Generator's Site Add US COAST 2660 EAST DETROIT A	GUARD ATWATER: 81 48207	an mailing addres	ss)	265	472	
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	900 900	HER ÖR 10 ROSELAW TROIT MI 48	N N			s v .		U.S. EPAID N			د دد د	
	9 ₆₁ 9		n (including Proper Shipp	ing Name, Hazard Class, ID. Numb		10.Go	ntainers, 5	11. Total Quantity	12. Unit WL/Vol		laste Codes	
8	1		ATEN LIQUIDS	and the second of the second of the	N	No.		/ //		029		
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	14 Sperie	Handling Instruction	s and Additional Informati		# 677	1 7 1 5			.3			, , ,
				[∞] 1) APPROVAL	" OT	///3-						
	15. GEN	ERATOR'S/OFFERO	R'S CERTIFICATION: 1h	sereby declare that the contents of	this consignment a	re fully and accurate	y described above	by the proper shi	pping name	and are class	ified, packa	ged,
	Expo I cert	rter, I certify that the c ify that the westermini	ontents of this consignme mization statement identif	ts in proper condition for transport of the editer and in 40 CFR 262.27(a) (If I am a li	thed EPA Acknowl	edgment of Consent.	-	-	If export shi	pinent and I a	n the Prima	ry
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N.E.		tional Shipments er signature (for expor			Export from U		of entry/exdt eaving U.S.:			<u> </u>	····	
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15	18. Discre									<u> -</u>		
	168. L/ISCN	epancy Indication Spa	Quentity	<u></u> Туре		Residue	anne Marie	Partial Reje	ction	L ;	Full Reje	ction
FACILITY	18b. Attern	ete Facility (or Genera	itor)			Manifest Relen	ance rumber.	U.S. EPAID N	umber			•
ED FAC	Facility's P 18c. Signa	hone: ture of Alternate Facili	ly (or Generator)					1		Mon	th Dary	Year
RIGHATED	19. Hazard	ous Waste Report Me	nagement Method Codes	(i.e., codes for hazardous waste to	natment, disposal	, and recycling system	ns)				1	<u> </u>
	1.		2.		3.			4.				
	20. Design Printed/Typ	ped Name		receipt of hazardous materials cov		est except as noted in	item 18a			Mon		Year
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\prod	UN	IIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID I	Number 1 1 2 0	91844	2. Page 1 of 1	3. Emerger 216-9	ncy Response F 02-6255	hone	4. Manifest	Tracking Mi N68	392	1 J.	IK
H	5. G	Generator's Name and Maili US COAST GUA	ng Address	<u> </u>	* Att JAM	S COOK	Generator's	Site Address (I	different th				540	
$\ $		1240 EAST NIN	th street	encmai			2660 E	ASI AIV	VATER	si	• • •	3		
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	1	esignated Facility Name at USHER CHI.	•		, , ,,,	.,				U.S. EPA ID N		** **		
Н		9000 ROSELAN DETROIT MI 40						•					er st.	
		lity's Phone: 313. E		- Chinaba Nama İ	lazard Class, ID Number,		-	10, Contains	<u> </u>	(14.44.1		898	5 8	4
	Sa. HIM			a Subbing Mane, r	arcand Coose, in Identifier.	<u> </u>		No.	Туре	11. Total Quantity	12:Unit WL/Vol	13, V	Vaste Code	<u> </u>
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	14. 8	L Special Handling Instruction	s and Additional In	formation	1) APPROVAL #	041	7 1 ?	·			بــــــا	<u></u>	<u></u>	
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	15.	GENERATOR'S/OFFERO	R'S CERTIFICATI	ON: I hereby decis	re that the contents of this	consignment g	e fully and a	accurately descriptional and mation	zibed above nel governm	by the proper shi ental regulations.	lpping name If export sh	, and are clas ipment and { a	sified, packs m the Prima	ged,
	ŀ	Exporter, I certify that the o	contents of this con	signment conform t	to the terms of the attached	d EPAAdmow!	edgment of (Consent.			•	•		•
l		rator's/Offeror's Printed/Ty	ped Name			Sign	PHETE	,	· ·			Mon	h Day	Year
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Į.		sporter signature (for expo	import i ts only):	b U.S.		Export from U	,S.	Port of entry Date teaving	_					
		ransporter Acknowledgment sporter 1 Printed/Typed Nar		rials		Sins	ature		1	7		Mon	h Day	Year
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TANS	Trans	sporter 2 Printed/Typed Nar	NB .			Sign	ature					Mon	h Day	Year
E	18. D	iscrepancy					<u> </u>							<u> </u>
	-	Discrepancy Indication Spa	Os Ous	ntity	Тура			Residue		Partial Rej	ection		Full Reja	ction
				-	· · ·		السائل	est Reference I	h maker	_				
Ĕ	18b./	Alternate Facility (or General	stor)					er Leuter Grand	1.010EA.	V.S. EPA ID N	lumber			_
됭	E	hần Piloner	4 .				<u></u> -	<i>f</i>						
	_	ty's Phone: Signature of Alternate Fecili	ty (or Generator)			7.07	· ,					Mor	ath Day	Year
DESIGNATED FACILITY								<u> </u>						
ES	19. H	azardous Waste Report Ma	nagement Method	Codes (i.e., codes	for hazardous waste treat	ment, disposal 3.	and recyclin	ið ekapaue)	-	4.				
7						<u></u>								
		esignated Facility Owner or d/Typed Name	Operator: Certific				est except as ature	s noted in Item	18a /			Mor	dh Day	Year
\prod				J (2)	24	. 1		>	رك يه	27		10	th Day	177

1	Plea	use print or type. (Farm designed for use on elite (1							Approved.	OMB No. 2	2050-0039
	†	UNIFORM HAZARDOUS 1. Generator D Number WASTE MANIFEST M. 1 K. 1 1	12091844	1	3. Emergency Response 216-902-6255	,	4 Manifest	068	392	0 1	JK.
		5. Generator's Name and Mailing Address US COAST GUARD 1240 EAST NINTH STREET RM (ALVELAND) OH 48207 Generator's Phone: 9 1 8 9 0 2	12179		Generators Site Address US COAST GE 2660 EAST AT DETROIT MA	JARD WATER 5	melling addres	35)	265	1/8	?
		Generator's Phone: 9 18 9 0 9 6 Transporter 1-Company Name HM Environmental Servicios, I	Toward Mada Artista Artista Artista Mada Tubbashi Karasa Mada	ក្នុងកម្មកំ ស្រ		mes Wall	U.S. EPAID N	Fruiper	0 0 1	707	, b
		7. Transporter 2 Company Name					U.S. EPA ID N				
		8. Designated Facility Name and Site Address USHER OIL	.111-1	(1) (1) (1)	GE CANTELL TO THE STATE OF THE		U.S. EPA ID N		· · · · · ·		
		9000 ROSELAWN DETROIT MI 48204 Facility's Phone: 313 834 7055	need to the except	n na mara	See See Land Leading Reserve			11 () () () () () () () () () (•	<u> </u>	
ļ		9a. 9b. U.S. DOT Description (including Proper Ship	ping Name, Hazard Class, ID Number,	,	10. Contai	ners	11. Total	12 Unit	•	Waste Code	
	~	HM and Packing Group (if any)) 1. NON REGULATED LIQUIDS		Aleki gege	No.	Туре	Quantity	Wt.Mal.	0291	,	
Ì	GENERATOR		Burnet (1995) arrang s Sangara (1995)	er f iloz <u>i</u> c		TT e	1000		4		
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		3.						_			
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7	1	14. Special Handling Instructions and Additional Informati	1) APPROVAL#	045	713-W						
		 GENERATOR'S/OFFEROR'S CERTIFICATION: 11 marked and labeled/placarded, and are in all respect Exporter, 1 certify that the contents of this consignment. 	ts in proper condition for transport accor	ding to applica	able international and nati	scribed above by lonal government	the proper shi tal regulations.	ipping name If export sh	, and are clas ipment and i	sified, packs am the Prima	ged, ry
	Ш	I certify that the waste minimization statement identitions and control of the co	fied in 40 CFR 262.27(a) (if I am a large	quentily gene	nator) or (b) (if I am a ama	d quantity gener	ator) is true.		Mon	din Daay	Year
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į	INTL	16. International Shipments Import to U.S. Transporter signature (for exports only):	<u></u> 1	Export from W	S. Port of en Date leavi	-	 			·	
	图	17. Transporter Acknowledgment of Receipt of Materials		Floor					Mon	th Day	Year
	Š	Transported Printed/Typed Name	c	agn L	ature	1/6	-	_	l i		1
	TRANSPORT	Transporter 2 Printed/Typed Name		Signi	ature				Mor	ith Day	Yefar
ľ	↑	18. Discrepancy							·		<u></u>
	Ш	18a. Discrepancy Indication Space Quantity	Туре		Residue	L	Partial Rej	ection	i	Full Regio	ction
l	<u></u>	18b. Alternate Facility (or Generator)			Manifest Reference		U.S. EPA ID N	lumber			
247	FACILITY	Facility's Phone:				ł					
	_ L	18c. Signature of Alternate Facility (or Generator)			 .				Mo	nth Day	Year
_[2		19. Hazardous Waste Report Management Method Code	s (i.e., codes for hazardous waste treatm	ent, disposal,	and recycling systems)	<u></u> ·					ــــــــــــــــــــــــــــــــــــــ
Ţ		1. 2.		3.	*		4.				
		20. Designated Facility Owner or Operator: Certification of	f receipt of hazardous materials covered	by the manife	est except as noted in her	h 18a	, 				
	1 6	Printed/Typed Name	The		ature (Z	dol.	-	 -	Ma 15€	nth Day	Year
	PA I	Form 8700-22 (Rev. 3-05) Previous editions are of	bsolete.	1_	- 17°	400	 -	TE	RANSPO	RTER'S	CÔPY

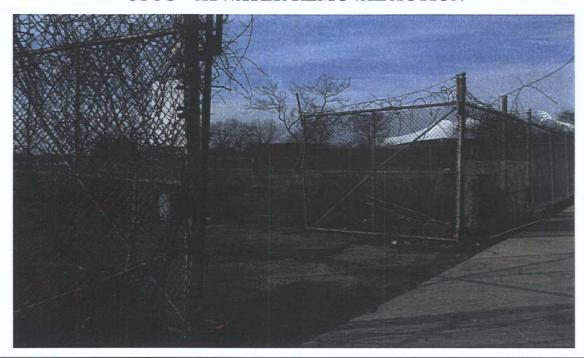
TRANSPORTER'S COPY



Appendix C

Removal and Restoration Activities Photographic Documentation

USCG - ATWATER REMOVAL ACTION



SITE:

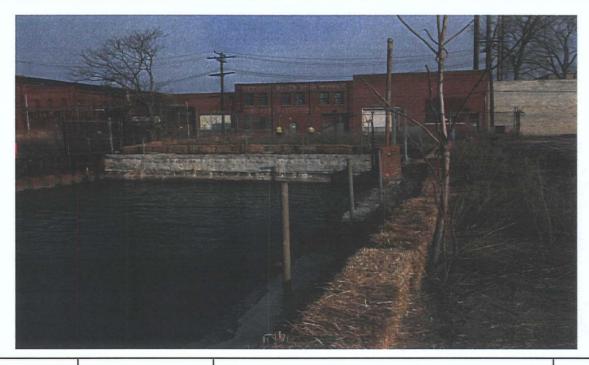
USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Southwest

DESCRIPTION: Entrance to the site prior to initiating any removal actions.

#1 04/08/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northwest

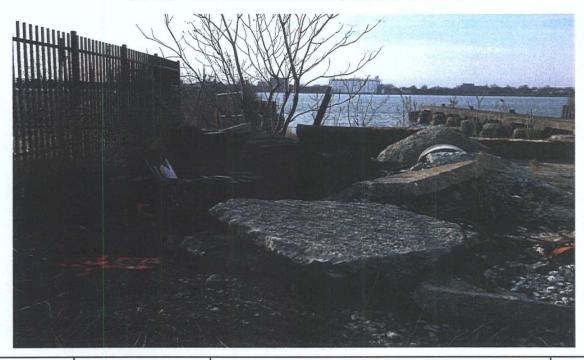
DESCRIPTION: Straw bales placed along perimeter of site for erosion/sediment control.

#2 04/08/13



Tetra Tech, Inc.

USCG - ATWATER REMOVAL ACTION



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Southeast

DESCRIPTION: Concrete and misc. other debris to be removed from the site prior to initiating excavation activities.

#3 04/08/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northwest

DESCRIPTION: All excavation corners were professionally surveyed prior to initiating removal activities.

#4 04/08/13



USCG - ATWATER REMOVAL ACTION

DETROIT, MI



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt
VIEW: North

DESCRIPTION: Well abandonment activities prior to

excavating.

#5 04/08/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: West

DESCRIPTION: Heavy equipment mobilizing to the site.

#6 04/08/13



Tetra Tech, Inc.



SITE: USCG - Atwater Removal Action PHOTOGRAPHER:
J. Goerdt

VIEW: Southeast

DESCRIPTION: Loading of broken concrete into disposal truck.

#7 04/09/13



SITE: USCG - Atwater Removal Action PHOTOGRAPHER:
J. Goerdt
VIEW: East

DESCRIPTION: Large concrete footer discovered within the southern portion of the Area 7 excavation.

#8 04/09/13



SITE: USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Southeast

DESCRIPTION: Area 7 excavation.

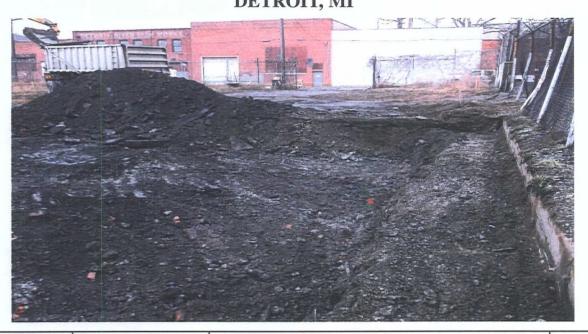
#9 04/09/13



SITE: USCG - Atwater Removal Action PHOTOGRAPHER:
J. Goerdt
VIEW: ---

DESCRIPTION: Large wooden pilings were found in majority of excavations at the site.

#10 04/09/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northwest

DESCRIPTION: Concrete curbing was limit of excavations along eastern side of the site.

#11 04/10/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Southeast

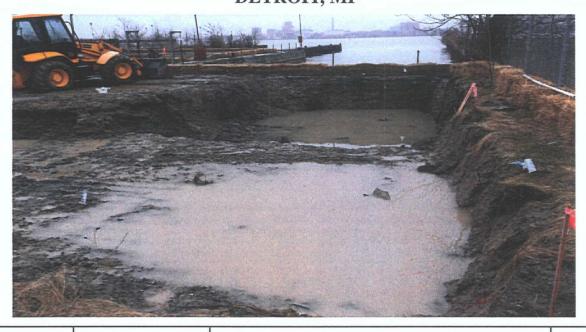
DESCRIPTION: Excavation Area 6 (foreground), Area 3

(central), and Area 7 (background).

#12 04/11/13



Tetra Tech, Inc.



SITE: USCG - Atwater Removal Action PHOTOGRAPHER:
J. Goerdt
VIEW: South

DESCRIPTION: Water accumulation in Area 1 (foreground) and Area 4 (background) from both heavy rains and groundwater recharge.

#13 04/12/13



SITE: USCG - Atwater Removal Action PHOTOGRAPHER:
J. Goerdt

VIEW: Southeast

DESCRIPTION: Additional areas marked for excavation along Area 3 based on analytical results.

#14 04/16/13





SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northwest

DESCRIPTION: Excavation Area 7 (foreground), Area 3 (central) and Area 6 (background).

#15 04/16/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Southeast

DESCRIPTION: Clean fill (Class 2 sand) being distributed

across the site.

#16 04/18/13



Tetra Tech, Inc.



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:
J. Goerdt

VIEW: Southeast

DESCRIPTION: Clean fill (Class 2 sand) spread evenly across the site.

#17 04/18/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northwest

DESCRIPTION: Water being pumped from Area 4.

#18 04/19/13





SITE:

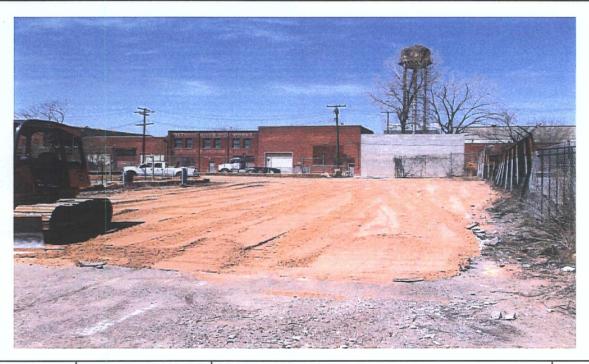
USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northeast

DESCRIPTION: Fill compaction within Area 5.

#19 04/19/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northwest

DESCRIPTION: Final grade of clean fill (Class 2 sand).

#20 04/22/13





SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Southeast

DESCRIPTION: Distribution of top soil.

#21 04/23/13



SITE:

USCG - Atwater Removal Action PHOTOGRAPHER:

J. Goerdt

VIEW: Northwest

 $\ensuremath{\textbf{DESCRIPTION:}}$ Top soil application complete. Site seeded and

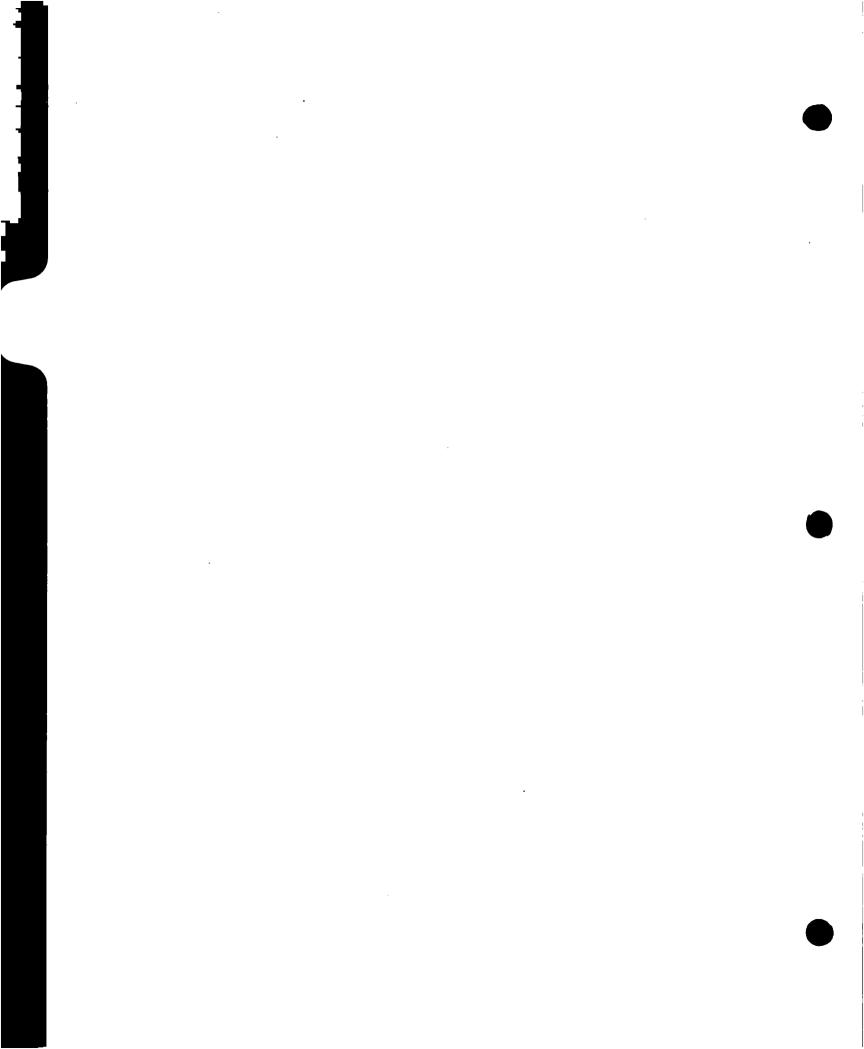
lightly raked.

#22 04/23/13



Tetra Tech, Inc.

ı



Appendix D

Laboratory Analytical Reports

WASTE CHARACTERIZATION ANALYSES



phone toll-free 231.773.5998 800.733.5998 231.773.6537 Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon, MI 49444-2673 info@trace-labs.com www.trace-labs.com

March 26, 2013

Mr. Bob Borst HM Environmental Services, Inc. 42826 N. Walnut Mt. Clemens. MI 48043

Phone: (586) 469-0041 Fax: (586) 469-1014

RE:

Trace Project

T13C270

Client Project

USCG Atwater

Dear Mr. Borst:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at imink@trace-labs.com.

Sincerely,

Jon Mink

Senior Project Manager

Enclosures





phone toll-free fax

231.773.5998 800.733.5998 231.773.6537

Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon. MI 49444-2673 info@trace-labs.com www.trace-labs.com

SAMPLE SUMMARY

Trace Project ID:

T13C270

Client Project ID:

USCG Atwater

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13C270-01	Soil Composite North End of Property	Solid	sm	03/20/13 09:00	03/20/13 15:30
T13C270-02	Soil Grab South End of Property	Solid	sm	03/20/13 09:00	03/20/13 15:30



phone 231.773.599B toll-free 800.733.5998 fax

231.773.6537

Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon. MI 49444-2673 info@trace-labs.com www.trace-labs.com

AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS Laboratory Control Sample

LCSD Laboratory Control Sample Duplicate

MS Matrix Spike

MSD Matrix Spike Duplicate **RPD** Relative Percent Difference

DUP Matrix Duplicate

RDL Reporting Detection Limit MCL Maximum Contamination Limit TIC Tentatively Identified Compound

<. ND or U Indicates the compound was analyzed for but not detected

Indicates a result that exceeds its associated MCL or Surrogate control limits

Ν Indicates that the compound has not been evaluated by NELAC

NA Indicates that the compound is not available.



phone toll-free fax

231.773.5998 800.733.5998 231.773.6537

RESULTS UNITS

Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon, MI 49444-2673 info@trace-labs.com www.trace-labs.com

ANALYTICAL RESULTS

Trace Project ID:

T13C270

Client Project ID: **USCG Atwater**

Trace ID:

T13C270-01

Date Collected:

03/20/13 09:00

Matrix: Solid

ANALYZED

Sample ID:

Soil Composite North End of Property

Date Received:

DILUTION

03/20/13 15:30

PREPARED BY

NOTES MCL

METALS,	TCLP
	,

PARAMETERS

Analysis Method: EPA 6010B

Batch:	T035889

Arsenic	<0.30 mg/L	0.30	1	03/22/13	jan	03/22/13	mes	5.0
Barium	1.2 mg/L	1.0	1	03/22/13	jan	03/22/13	mes	100
Cadmium	<0.10 mg/L	0.10	1	03/22/13	jan	03/22/13	mes	1.0
Chromium	<0.50 mg/L	0.50	1	03/22/13	jan	03/22/13	mes	5.0
Lead	<0.50 mg/L	0.50	1	03/22/13	jan	03/22/13	mes	5.0
Selenium	<0.60 mg/L	0.60	1	03/22/13	jan	03/22/13	mes	1.0

0.10

0.010

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Trace Analytical Laboratories, Inc.

RDL

Analysis Method: EPA 7470A

Batch: T035882

Mercury

Silver

<0.010 mg/L

<0.10 mg/L

03/22/13

jan

03/22/13

03/22/13

03/22/13

mes

5.0

0.20



phone toll-free fax

231.773.5998 800.733.5998 231.773.6537

RESULTS UNITS

<0.30 mg/L

<0.10 mg/L

<0.010 mg/L

1.5 mg/L

Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon, MI 49444-2673 info@trace-labs.com www.trace-labs.com

ANALYTICAL RESULTS

Trace Project ID:

T13C270

Client Project ID:

USCG Atwater

Trace ID:

T13C270-02

Date Collected:

03/20/13 09:00

Matrix: Solid

ANALYZED

03/22/13

03/22/13

03/22/13

03/22/13

03/22/13

03/22/13

03/22/13

Sample ID:

PARAMETERS

Soil Grab South End of Property

Date Received:

DILUTION

03/20/13 15:30 PREPARED

03/22/13

03/22/13

03/22/13

03/22/13

03/22/13

03/22/13

03/22/13

BY

jan

jan

jan

jan

ian

jan

jan

BY **NOTES** MCL

5.0

1.0

5.0

1.0

5.0

5.0

100

METALS, TCLP

Analysis Method: EPA 6010B

Batch:	T035889
Arsenic	

Arsenic	
Barium	

Cadmium

Chromium

Lead Selenium

Silver

Analysis Method: EPA 7470A

Mercury

Batch: T035882

<0.50 mg/L 0.50 0.60 mg/L 0.50 <0.60 mg/L 0.60 <0.10 mg/L

RDL

0.30

1.0

0.10

0.10

0.010

03/22/13

03/22/13 jan

mes

mes

mes

mes

mes

mes

mes

mes

0.20

CERTIFICATE OF ANALYSIS



phone fax

231.773.5998 toll-free 800.733.5998 231.773.6537

Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon, MI 49444 2673

info@trace-labs.com www.trace-labs.com

QUALITY CONTROL RESULTS

Trace Project ID: T13C270 Client Project ID: USCG Atwater

QC Batch: T035889

QC Batch Method: EPA 3015 Microwave Assisted Digestions

for Liquids

Analysis Description: Lead, TCLP

Analysis Method: EPA 6010B

METHOD BLANK: T035889-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.10	0.10	
Arsenic	mg/L	<0.30	0.30	
Barium	mg/L	<1.0	1.0	
Cadmium	mg/L	<0.10	0.10	
Chromium	mg/L	<0.50	0.50	·
Lead	mg/L	<0.50	0.50	
Selenium	mg/L	<0.60	0.60	

METHOD BLANK: T035889-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	mg/L	<0.10	0.10	
Arsenic	mg/L	<0.30	0.30	
Barium	mg/L	<1.0	1.0	
Cadmium	mg/L	<0.10	0.10	
Chromium	mg/L	<0.50	0.50	
Lead	mg/L	<0.50	0.50	
Selenium	mg/L	<0.60	0.60	

LABORATORY CONTROL SAMPLE: T035889-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	mg/L	0.0278	<0.10	95	80-120	
Arsenic	mg/L	0.0556	<0.30	100	80-120	
Barium	mg/L	0.889	<1.0	106	80-120	
Cadmiųm	mg/L	0.0278	<0.10	104	80-120	
Chromium	mg/L	0.0278	<0.50	111	80-120	
Lead	mg/L	0.0556	<0.50	100	80-120	
Selenium	mg/L	0.0556	<0.60	88	80-120	

Trace Project ID: T13C270 Client Project ID: USCG Atwater

QC Batch: T035882

QC Batch Method: EPA 7470A Prep

Analysis Description: Mercury, TCLP

Analysis Method: EPA 7470A



phone fax

231.773.5998 toll-free 800.733.5998 231.773.6537 Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon, MI 49444-2673 info@trace-labs.com www.trace-labs.com

.K1

Parameter	Units	Blank Result	Reporting Limit		Notes
Mercury	mg/L	<0.010	0.010	- "	

METHOD BLANK: T035882-BLK2

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T035882-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	mg/L	0.00200	<0.010	106	80-120	

Trace Project ID: T13C270 Client Project ID: USCG Atwater

QC Batch: T035872 Analysis Description: TCLP Extraction, Metals

Analysis Method: EPA 1311 QC Batch Method: Leaching proceedures

CERTIFICATE OF ANALYSIS

CERTIFICATE OF ANALYSIS

			CHAIN-OF-CUSTODY RECORD
RACE	phone	231.773.5998	Trace Analytical Laboratories, Inc.
	toll-free	800.733.5998	2241 Black Creek Road

	TRACE ID NO.
Pageof	TBCATO

Report Results To:	Client Name: HW ENVIRONMINTAL SERVICES, INC. Contact Person: BOB BORS T Melling Address: 42 8 2CP N. WALNUT City, State, Zip Code: MT. CLEMINS, MI Phone: 58(0, 4/69, 504/4)							Soil Volatiles Preserved: MeOH Low Level Lab Sampling Time: Regulatory Requirements Turnaround Requirements Matrix Key									Wipes Liquid Was Air Drinking Wa	ste			
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BIII To:		ddress (il difle			Phone:	PO#:					/	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			//					/	Health Hazard
	TRACE NO.	DATE TAKEN	TIME TAKEN	METALS FIELD PLIERED	CLIENT	SÄMPLE ID		MATRIX	NUMBER OF CONTAINERS	/a						_			REMARK	s	Possible
8	0	3/20	91001		Composity Soil	- Com Pos IT	Ė	5	1	X									106		
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Sign		RELE	ASED BY	<u> </u>	RECEIVED BY	DATE	TIM		Ite	em		RELEAS				RECEIV	/ED BY		DATE	TIME	
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In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at http://www.trace-labs.com/cocterms.php

Trace Analytical Laboratories, Inc. 224: Black Creek Road Muskegon, MI 49444-2673 info@trace-labs.com www.trace-labs.com

231.773.5998 800.733.5998 231.773.6537

Report ID: T13C270 FINAL 03 26 13 1613



phone 231.773.5998 toll-free 800.733.5998 fax 231.773.6537

Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon, MI 49444-2673 info@trace-labs.com www.trace-labs.com

SAMPLE LOG IN CHECKLIST

Date: 3/8 / 13	Client Name:	HM Enurson	maila # of Coo	olers: \
Trace ID #: 130270	Project Name:	·	Coole	or#s:
	Logged in by:	24O	Coole	or #s:
	Cod	oler Receipt		
	Trace cou			
Cooler/samples delivered by:	Hand delive		ne of delivery person:	
	Commercial cou	rier UF	PS DHL FEE	DEX US Mail
Did cooler come with a bill of lading?		No .	Not Applicable	
			/ay Bill or Tracking #:	
COC Seals present and intact on cooler?	No	Not Applical	oje:	
Overhade apple planted by Ollant2	Yes	Client mustady one	d # ## andinable	
Custody seals signed by Client?	No	Client custody sea	(# (ii appicabie):	
		and Temperatur		
Type of Coolant Use				n Factor 6.1 °C
	Yes No	Date: 361/13		
Slurry w/ crushed, cubed, or chip ice?		Temperature Blar	ik: °C (Use	Digital Stick Thermometer)
Multiple bags of ice around samples?		Range of 3 sample	ies: <u>9.5 °</u> °C (Use	IR Thermometer)
ice Packs/ Blue ice :		Melt Water:	°C (_IR_ or :	Stick Therm circle one)
No Coolant Present:		ice still presei	nt upon receipt: Yes	No
		General		
				Yes No NA
	COC taped to insid	***********	#** = \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	
			M1 104 M-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	
Each samp			a a tampana galificia tan galafin galafi galafi salimus aning upur yamar alahanya galaga a fina a bayan ani	
All bottle labels ac				
	nt sample to run te			
	cked and samples	***************************************	See Below*	
Correc	t preservative adde	d to samples?		
DRO/GRO samples received and appl	opriate check in for	m completed?		
	Air bubbles abser	nt from VOAs?		
COC filled	out properly and sig	ned by client?		
-	in by TRACE same		ar ar end land in sing on the part of the supersystem and the supersystem of the supersys	
Was project manage	er called and sampl	es discussed?	, many importer y labeled from the subsections with the time we present the same assessment as	
Contact:		 	Date:	
Notes:	<u> </u>		*EMD pH Te	st Strips Used:
			pH 0-2.5	pH 11.0-13.0
	<u> </u>	<u> </u>	Lot: HC932215	Lot: HC949254
			Other:	
			Other:	

CERTIFICATE OF ANALYSIS

CONFIRMATION SAMPLE AND BACKFILL ANALYSES



April 16, 2013

TETRA TECH NUS - Pittsburgh Attn: Mr. Joe Logan 661 Anderson Drive, Foster Plaza 7 Pittsburgh, PA 15220

Project: USCG Atwater Facility

Dear Mr. Joe Logan,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

 Work Order
 Received
 Description

 1304171
 04/10/2013
 112G02435

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/12-056-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#83658); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood Project Chemist



Client:

TETRA TECH NUS - Pittsburgh

1304171

Project:

USCG Atwater Facility

Description:

112G02435

Client Sample ID: DASB238-0305

Sampled:

04/09/13 13:50

Lab Sample ID:

1304171-01

mg/kg dry

Sampled By:

Work Order:

Tetra Tech NUS

Matrix: Unit:

Soil

Received:

04/10/13 17:15

Dilution Factor:

1

Prepared:

04/11/13 By: ALK

Analyzed:

04/11/13 By: ASC

QC Batch: Percent Solids: 1303247 83

Analytical Batch: 3D12016

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.0113	0.020	0.0055
208-96-8	Acenaphthylene	0.00703	0.020	0.0050
120-12-7	Anthracene	0.015J	0.020	0.0048
56-55-3	Benzo(a)anthracene	0.11	0.020	0.0033
50-32 - 8	Benzo(a)pyrene	0.13	0.020	0.0028
*205-99-2	Benzo(b)fluoranthene	0.12	0.020	0.0023
*207-08-9	Benzo(k)fluoranthene	0.083	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.088	0.020	0.0023
218-01-9	Chrysene	0.10	0.020	0.0047
53-70-3	Dibenz(a,h)anthracene	0.020	0.020	0.0023
206-44-0	Fluoranthene	0.13	0.020	0.0054
86-73-7	Fluorene	0.0065〕	0.020	0.0048
193-39-5	Indeno(1,2,3-cd)pyrene	0.076	0.020	0.0032
91-57-6	2-Methylnaphthalene	0.020U	0.020	0.0055
91-20-3	Naphthalene	0.020U	0.020	0.0067
*85-01-8	Phenanthrene	0.066	0.020	0.0049
*129-00-0	Pyréne	0.19	0.020	0.0052

Surrogates:	% Recov	ery Control Limits
Nitrobenzene-d5	<i>79</i>	<i>35-100</i>
2-Fluorobiphenyl	. 80	<i>45-105</i>
o-Terphenyl	<i>79</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB238-0305

Lab Sample ID:

1304171-01

Matrix: Percent Solids:

83

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 13:50

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	4.5	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 10:25	DSC 1303272
*Lead	56	1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	04/12/13 11:54	DSC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB238-0305 1304171-01

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 13:50

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	83	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR 1303262



Client:

TETRA TECH NUS - Pittsburgh

Work Order: Description:

1304171

Project:

USCG Atwater Facility

112G02435

Lab Sample ID:

Client Sample ID: DASB239-0305 1304171-02

Sampled: Sampled By: 04/09/13 13:53

Matrix:

Soil

Received:

Tetra Tech NUS 04/10/13 17:15

Unit: mg/kg dry Prepared:

04/11/13 By: ALK

Dilution Factor:

By: ASC

QC Batch:

1303247

Analyzed:

04/11/13

Analytical Batch: 3D12016

Percent Solids: 82

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL	
83-32-9	Acenaphthene	0.070	0.020	0.0056	
208-96-8	Acenaphthylene	0.020U	0.020	0.0051	
120-12-7	Anthracene	0.020U	0.020	0.0049	
56-55-3	Benzo(a)anthracene	0.00623	0.020	0.0033	
50-32-8	Benzo(a)pyrene	0.00663	0.020	0.0028	
*205-99-2	Benzo(b)fluoranthene	0.00463	0.020	0.0023	
*207-08-9	Benzo(k)fluoranthene	0.0046J	0.020	0.0024	
191-24-2	Benzo(g,h,i)perylene	0.0029J	0.020	0.0023	
218-01-9	Chrysene	0.00663	0.020	0.0047	
53-70-3	Dibenz(a,h)anthracene	0.020U	0.020	0.0023	
206-44-0	Fluoranthene	0.0103	0.020	0.0054	
86-73-7	Fluorene	0.020U	0.020	0.0049	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0033J	0.020	0.0032	
91-57-6	2-Methyinaphthalene	0.020U	0.020	0.0055	
91-20-3	Naphthalene	0.020U	0.020	0.0068	
85-01-8	Phenanthrene	0.0091J	0.020	0.0049	
129-00-0	Pyrene	0.0123	0.020	0.0052	

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>79</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>82</i>	<i>45-105</i>
o-Temhenvl	<i>85</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB239-0305

Lab Sample ID:

1304171-02

Matrix: Percent Solids: Soil 82

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 13:53

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed i	QC By Batch
Arsenic	5.5	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 10:39 D	SC 1303272
Lead	13	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/12/13 12:14 D	SC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB239-0305 1304171-02

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 13:53

Sampled By: Received:

Tetra Tech NUS 04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	82	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAF	1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB240-0305

Lab Sample ID: Matrix:

1304171-03

Unit:

Soil

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

82

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 13:58

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared:

04/11/13 By: ALK

Analyzed:

04/12/13 By: DWJ

Analytical Batch: 3D12027

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
	······································			
83-32 -9	Acenaphthene	0.133	0.20	0.057
208 -96- 8	Acenaphthylene	0.0833	0.20	0.051
120-12-7	Anthracene	0.53	0.20	0.049
56-55-3	Benzo(a)anthracene	1.6	0.20	0.034
50-32-8	Benzo(a)pyrene	1.4	0.20	0.028
*205- 99 -2	Benzo(b)fluoranthene	1.5	0.20	0.023
*207-08- 9	Benzo(k)fluoranthene	0.76	0.20	0.024
191-24-2	Benzo(g,h,i)perylene	0.65	0.20	0.023
218-01- 9	Chrysene	1.6	0.20	0.048
*53-70-3	Dibenz(a,h)anthracene	0.15J	0.20	0.023
206 -44- 0	Fluoranthene	2.9	0.20	0.055
86-73-7	Fluorene	0.153	0.20	0.049
193-39-5	Indeno(1,2,3-cd)pyrene	0.61	0.20	0.033
91-57-6	2-Methylnaphthalene	0.20U	0.20	0.056
*91-20-3	Naphthalene	0.20U	0.20	0.069
85-01-8	Phenanthrene	1.6	0.20	0.050
129-00-0	Pyrene	2.9	0.20	0.053

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	44	<i>35-100</i>
2-Fluorobiphenyl	66	<i>45-105</i>
o-Temhenvl	<i>79</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB240-0305 1304171-03

Matrix:

Soil 82

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 13:58

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL.	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	7.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 10:42	DSC	1303272
Lead	120	2.5	0.16	mg/kg dry wt.	25	USEPA-6020A	04/12/13 12:17	DSC	1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB240-0305

Lab Sample ID:

1304171-03

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 13:58

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC y Batch
Percent Solids	82	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BA	R 1303262



Client:

TETRA TECH NUS - Pittsburgh

Work Order: Description:

1304171

Project:

USCG Atwater Facility

112G02435

Lab Sample ID:

Client Sample ID: DASB241-0305 1304171-04

Sampled: Sampled By: 04/09/13 14:02 Tetra Tech NUS

Matrix:

Soil

Received:

04/10/13 17:15

Unit:

mg/kg dry

Prepared: Analyzed: 04/11/13 By: ALK

Dilution Factor:

04/12/13 By: DWJ

QC Batch:

1303247

Analytical Batch: 3D12027

Percent Solids: 81

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.23	0.21	0.057
208-96-8	Acenaphthylene	0.21U	0.21	0.051
120-12-7	Anthracene	0.57	0.21	0.049
56-55-3	Benzo(a)anthracene	1.3	0.21	0.034
50-32-8	Benzo(a)pyrene	1.1	0.21	0.028
*205- 99- 2	Benzo(b)fluoranthene	1.2	0.21	0.023
*207-08-9	Benzo(k)fluoranthene	0.64	0.21	0.024
191-24-2	Benzo(g,h,i)perylene	0.57	0.21	0.023
218-01- 9	Chrysene	1.3	0.21	0.048
53-70-3	Dibenz(a,h)anthracene	0.113	0.21	0.023
206-44-0	Fluoranthene	2.3	0.21	0.055
86-73-7	Fluorene	0.26	0.21	0.050
193-39-5	Indeno(1,2,3-cd)pyrene	0.55	0.21	0.033
* 91-57-6	2-Methylnaphthalene	0.21U	0.21	0.056
91-20-3	Naphthalene	0.21U	0.21	0.069
85-01-8	Phenanthrene	2.1	0.21	0.050
129-00-0	Pyrene	3.0	0.21	0.053

Surrogates:	% Recovery	Control Limits		
Nitrobenzene-d5	61 .	<i>35-100</i>		
2-Fluorobiphenyl	<i>65</i>	<i>45-105</i>		
o-Terphenyl	<i>75</i> .	<i>30-125</i>		



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB241-0305 1304171-04

Lab Sample ID: Matrix:

Soil

Percent Solids: 81 Work Order:

1304171

Description:

112G02435

Sampled: Sampled By: 04/09/13 14:02 Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	7.7	0.10	0.016	mg/kg dry wt.	. 1	USEPA-6020A	04/12/13 10:45	DSC	1303272
Lead	320	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/12/13 12:19	DSC	1303272



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB241-0305 1304171-04

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 14:02

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	81	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR 1	303262



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASB242-0305

DACED ALWELD TECHIC

Lab Sample ID:

1304171-05

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

1

QC Batch:

1303247

Percent Solids: 85

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 14:12

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared: Analyzed: 04/11/13 By: ALK

04/11/13

By: ASC

Analytical Batch: 3D12016

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.0183	0.020	0.0055
208 -9 6-8	Acenaphthylene	0.020U	0.020	0.0049
120-12-7	Anthracene	0.031	0.020	0.0047
56-55-3	Benzo(a)anthracene	0.033	0.020	0.0032
*50-32-8	Benzo(a)pyrene	0.013J	0.020	0.0027
*205- 99- 2	Benzo(b)fluoranthene	0.023	0.020	0.0023
*207-08- 9	Benzo(k)fluoranthene	0.016J	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.0113	0.020	0.0022
218-01-9	Chrysene	0.033	0.020	0.0046
53-70-3	Dibenz(a,h)anthracene	0.0028J	0.020	0.0023
20 6-44- 0	Fluoranthene	0.098	0.020	0.0053
86-73-7	Fluorene .	0.027	0.020	0.0048
*193-39-5	Indeno(1,2,3-cd)pyrene	0.0073J	0.020	0.0032
91-57-6	2-Methylnaphthalene	0.51	0.020	0.0054
91-20-3	Naphthalene	0.75	0.020	0.0066
85-01-8	Phenanthrene	0.10	0.020	0.0048
129-00-0	Pyrene	0.10	0.020	0.0051

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	<i>93</i>	<i>35-100</i>
2-Fluorobiphenyl	· <i>77</i>	<i>45-105</i>
o-Terphenyl	<i>73</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB242-0305

Matrix:

1304171-05 Soil

85

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 14:12

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC y Batch
Arsenic	7.0	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 10:53 DS	SC 1303272
Lead	18	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/12/13 12:22 DS	SC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: **DASB242-0305** 1304171-05

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 14:12

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	85	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR 1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB243-0305 1304171-06

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

20

QC Batch:

1303247

Percent Solids:

81

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 14:08

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared:

04/11/13 By: ALK

Analyzed:

04/11/13

By: DWJ

Analytical Batch: 3D12027

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
				
83-32- 9	Acenaphthene	0.85	0.41	0.11
208 -96- 8	Acenaphthylene	0.41U	0.41	0.10
120-12-7	Anthracene	2.4	0.41	0.099
56-55-3	Benzo(a)anthracene	4.5	0.41	0.068
50-32-8	Benzo(a)рутепе	4.2	0.41	0.057
*205-99-2	Benzo(b)fluoranthene	4.0	0.41	0.047
*207-08-9	Benzo(k)fluoranthene	2.2	0.41	0.048
191-24-2	Benzo(g,h,i)perylene	2.6	0.41	0.047
218-01- 9	Chrysene	4.5	0.41	0.096
*53-70-3	Dibenz(a,h)anthracene	0.42	0.41	0.047
206-44-0	Fluoranthene	8.7	0.41	0.11
86-73-7	Fluorene	0.68	0.41	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	0.41	0.066
91-57-6	2-Methylnaphthalene	0.41U	0.41	0.11
91-20-3	Naphthalene	0.41U	0.41	0.14
85-01-8	Phenanthrene	6.9	0.41	0.10
129-00-0	Pyrene	11	0.41	0.11



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB243-0305

Lab Sample ID:

1304171-06

Matrix: Percent Solids:

Soil 81

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 14:08

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC By Batch
Arsenic	6.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 10:56 D	SC 1303272
Lead	38	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/12/13 12:25 D	SC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB243-0305 1304171-06

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled: Sampled By: 04/09/13 14:08 Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	81	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR 1303262



Work Order:

Description:

Sampled By:

Sampled:

Received:

Prepared:

Analyzed:

Analytical Batch: 3D12027

1304171

04/11/13

04/12/13

112G02435

04/09/13 00:00

Tetra Tech NUS

04/10/13 17:15

By: ALK

By: DWJ

Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-FD-01 1304171-07

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303247

Percent Solids:

81

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.065	0.021	0.0057
208-96-8	Acenaphthylene	0.023	0.021	0.0052
120-12-7	Anthracene	0.16	0.021	0.0050
56-55-3	Benzo(a)anthracene	0.56	0.021	0.0034
50-32-8	Benzo(a)pyrene	0.34	0.021	0.0028
*205- 99 -2	Benzo(b)fluoranthene	0.47	0.021	0.0024
*207-08- 9	Benzo(k)fluoranthene	0.23	0.021	0.0024
191-24-2	Benzo(g,h,i)perylene	0.20	0.021	0.0023
218-01 -9	Chrysene	0.39	0.021	0.0048
*53-70-3	Dibenz(a,h)anthracene	0.044	0.021	0.0024
206-44-0	Fluoranthene	0.74	0.021	0.0055
86-73-7	Fluorene	0.086	0.021	0.0050
193-39-5	Indeno(1,2,3-cd)pyrene	0.17	0.021	0.0033
91-57-6	2-Methylnaphthalene	0.020J	0.021	0.0056
91-20-3	Naphthalene	0.0173	0.021	0.0069
85-01-8	Phenanthrene	0.68	0.021	0.0050
129-00-0	Pyrene	0.85	0.021	0.0053

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>70</i>	<i>35-100</i>
2-Fluorobiphenyl	· 69	<i>45-105</i>
o-Terphenyl	<i>65</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-FD-01 1304171-07

Matrix:

Soil 81

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 00:00

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	8.0	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 10:59	DSC	1303272
Lead	270	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/12/13 12:28	DSC	1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB-FD-01 Lab Sample ID:

1304171-07

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/09/13 00:00

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	81	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR 1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS213-0002 1304171-08

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

87

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 10:50

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared: Analyzed: 04/11/13 By: ALK 04/11/13

By: ASC

Analytical Batch: 3D12016

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32- 9	Acenaphthene	0.14J	0.19	0.053
*208-96-8	Acenaphthylene	0.0691	0.19	0.048
120-12-7	Anthracene	0.44	0.19	0.046
56-55-3	Benzo(a)anthracene	1.1	0.19	0.032
50-32-8	Benzo(a)pyrene	1.2	0.19	0.027
*205 -99 -2	Benzo(b)fluoranthene	1.3	0.19	0.022
*207-08-9	Benzo(k)fluoranthene	0.90	0.19	0.023
191-24-2	Benzo(g,h,i)perylene	0.69	0.19	0.022
218-01- 9	Chrysene	1.2	0.19	0.045
53-70-3	Dibenz(a,h)anthracene	0.25	0.19	0.022
206-44-0	Fluoranthene	2.5	0.19	0.052
*86-73-7	Fluorene	0.123	0.19	0.047
193-39-5	Indeno(1,2,3-cd)pyrene	0.61	0.19	0.031
* 91-57 - 6	2-Methylnaphthalene	0.19U	0.19	0.053
91-20-3	Naphthalene	0.085J	0.19	0.065
85-01-8	Phenanthrene	1.9	0.19	0.047
129-00-0	Pyrene	2.4	0.19	0.050

Surrogates:	% Recovery	Control Limits
Nitroberzene-d5	61	<i>35-100</i>
2-Fluorobiphenyl	· 73	45-105
o-Tembenyl	113	<i>30-125</i>



Client: Project: TETRA TECH NUS - Pittsburgh

USCG Atwater Facility

Client Sample ID: DASS213-0002

Lab Sample ID:

1304171-08

Matrix: Percent Solids: Soil 87

Description: Sampled:

Work Order:

1304171

112G02435

Sampled By:

04/10/13 10:50 Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	8.3	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:02	DSC	1303272
Lead	720	10	0.66	mg/kg dry wt.	100	USEPA-6020A	04/12/13 12:37	DSC	1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS213-0002 1304171-08

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 10:50

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	87	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR	1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS214-0002

Lab Sample ID:

1304171-09

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

79

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 10:55

Sampled By:

Tetra Tech NUS

Received:

Prepared:

04/10/13 17:15 By: ALK

Analyzed:

04/11/13

04/11/13

By: ASC

Analytical Batch: 3D12016

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.21U	0.21	0.059
208-96-8	Acenaphthylene	0.21U	0.21	0.053
*120-12-7	Anthracene	0.0913	0.21	0.051
56-55-3	Benzo(a)anthracene	0.31	0.21	0.035
50-32-8	Benzo(a)pyrene	0.38	0.21	0.029
*205 -99 -2	Benzo(b)fluoranthene	0.58	0.21	0.024
*207-08-9	Benzo(k)fluoranthene	0.40	0.21	0.025
191-24-2	Benzo(g,h,i)perylene	0.32	0.21	0.024
*218-01-9	Chrysene	0.46	0.21	0.049
53-70-3	Dibenz(a,h)anthracene	0.10J	0.21	0.024
206-44-0	Fluoranthene	0.47	0.21	0.057
86-73-7	Fluorene	0.21U	0.21	0.051
193-39-5	Indeno(1,2,3-cd)pyrene	0.25	0.21	0.034
*91-57 - 6	2-Methylnaphthalene	0.21U	0.21	0.058
91-20-3	Naphthalene	0.21U	0.21	0.071
85-01-8	Phenanthrene	0.26	0.21	0.052
129-00-0	Pyrene	0.73	0.21	0.055

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	<i>90</i>	<i>35-100</i>
2-Fluorobiphenyl	· 71	<i>45-105</i>
o-Temhenvi	74	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS214-0002

Lab Sample ID: Matrix:

1304171-09

Percent Solids:

Soil 79

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 10:55

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	8.7	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:05	DSC	1303272
Lead	290	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/12/13 12:40	DSC	1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS214-0002

Lab Sample ID: Matrix:

1304171-09

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 10:55

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	79	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR	1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS215-0002 1304171-10

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

90

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:00

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared: Analyzed: 04/11/13 By: ALK 04/11/13

By: ASC

Analytical Batch: 3D12016

*Semivolatile Organic Compounds by EPA Method 8270C

		Analytical			
CAS Number	Analyte	Result	RL	MDL	
83-32 -9	Acenaphthene	0.190	0.19	0.052	
208- 96- 8	Acenaphthylene	0.19U	0.19	0.046	
*120-12-7	Anthracene	0.173	0.19	0.045	
5 6- 55-3	Benzo(a)anthracene	0.24	0.19	0.031	
50-32-8	Benzo(a)pyrene	0.25	0.19	0.026	
*205 -99 -2	Benzo(b)fluoranthene	0.26	0.19	0.021	
*207-08- 9	Benzo(k)fluoranthene	0.21	0.19	0.022	
*191-24-2	Benzo(g,h,i)perylene	0.103	0.19	0.021	
*218-01- 9	Chrysene	0.30	0.19	0.043	
53-70-3	Dibenz(a,h)anthracene	0.19U	0.19	0.021	
206-44-0	Fluoranthene	0.36	0.19	0.050	
86-73-7	Fluorene	0.19U	0.19	0.045	
193-39-5	Indeno(1,2,3-cd)pyrene	0.19U	0.19	0.030	
91-57-6	2-Methylnaphthalene	0.19U	0.19	0.051	
91-20-3	Naphthalene	0.19U	0.19	0.062	
85-01-8	Phenanthrene	0.24	0.19	0.045	
129-00-0	Рутеле	0.53	0.19	0.048	

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	<i>71</i>	<i>35-100</i>
2-Fluorobiphenyl	· 66	<i>45-105</i>
o-Temhenyl	<i>68</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS215-0002

Lab Sample ID: Matrix:

1304171-10

Percent Solids:

Soil 90

Work Order:

1304171

Description:

112G02435

Sampled: Sampled By: 04/10/13 11:00 Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	7.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:08	DSC 1303272
Lead	370	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/12/13 12:43	DSC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS215-0002 1304171-10

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:00

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Percent Solids	90	0.1	0.1	%	· 1	USEPA-3550C	04/11/13 13:40	BAR	1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS216-0002 1304171-11

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

81

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:05

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15 By: ALK

Prepared: Analyzed: 04/11/13 04/11/13

By: DWJ

Analytical Batch: 3D12027

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
				
83-32 -9	Acenaphthene	0.21U	0.21	0.057
208-96-8	Acenaphthylene	0.21U	0.21	0.052
120-12-7	Anthracene	0.21U	0.21	0.050
56-55-3	Benzo(a)anthracene	0.18 J	0.21	0.034
50-32 - 8	Benzo(a)pyrene	0.20J	0.21	0.029
*205-99-2	Benzo(b)fluoranthene	0.173	0.21	0.024
*207-08-9	Benzo(k)fluoranthene	0.153	0.21	0.024
191-24-2	Benzo(g,h,i)perylene	0.12J	0.21	0.023
218-01- 9	Chrysene	0.203	0.21	0.048
*53-70-3	Dibenz(a,h)anthracene	0.21ป	0.21	0.024
206 -41- 0	Fluoranthene	0.27	0.21	0.055
86-73-7	Fluorene	0.21U	0.21	0.050
*193-39-5	Indeno(1,2,3-cd)pyrene	0.0913	0.21	0.033
91-57-6	2-Methylnaphthalene	0.21U	0.21	0.057
91-20-3	Naphthalene	0.21U	0.21	0.069
85-01-8	Phenanthrene	0.11J	0.21	0.051
129-00-0	Pyrene	0.35	0.21	0.053

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	63	<i>35</i> -100
2-Fluorobiphenyl	. 73	<i>45</i> -105
o-Terphenyl	<i>76</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Percent Solids:

Client Sample ID: DASS216-0002

1304171-11

Matrix:

Soil 81

Work Order:

1304171

Description:

112G02435

Sampled: Sampled By: 04/10/13 11:05 Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	6.8	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:10	DSC :	1303272
Lead	180	2.5	0.16	mg/kg dry wt.	25	USEPA-6020A	04/12/13 12:45	DSC :	1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS216-0002 1304171-11

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:05

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	81	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR	1303262



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASS217-0002

Lab Sample ID:

1304171-12

Matrix: Unit:

Soil

Dilution Factor:

mg/kg dry

QC Batch:

1303247

Percent Solids:

87

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:10

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared:

04/11/13 By: ALK

Analyzed:

04/12/13 By: DWJ

Analytical Batch: 3D12027

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL .	MDL
			·	
83-32 -9	Acenaphthene	0.96U	0.96	0.27
208-96-8	Acenaphthylene	0.96U	0.96	0.24
120-12-7	Anthracene	0.483	0.96	0.23
56-55-3	Benzo(a)anthracene	2.0	0.96	0.16
50-32-8	Benzo(a)pyrene	2.1	0.96	0.13
*205 -99- 2	Benzo(b)fluoranthene	2.2	0.96	0.11
*207-08-9	Benzo(k)fluoranthene	1.2	0.96	0.11
191-24-2	Benzo(g,h,i)perylene	1.4	0.96	0.11
218-01 -9	Chrysene	2.1	0.96	0.22
53-70-3	Dibenz(a,h)anthracene	0.28J	0.96	0.11
206 -41- 0	Fluoranthene	3.7	0.96	0.26
*86-73-7	Fluorene	0.96U	0.96	0.23
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	0.96	0.15
91-57-6	2-Methylnaphthalene	0.96U	0.96	0.26
91-20-3	Naphthalene	0.96U	0.96	0.32
85-01-8	Phenanthrene	1.8	0.96	0.24
129-00-0	Pyrene	4.9	0.96	0.25



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS217-0002 1304171-12

Matrix:

Soil

Percent Solids: 87 Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:10

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	9.0	0.46	0.076	mg/kg dry wt.	5	USEPA-6020A	04/12/13 13:36	DSC - 1303272
Lead	530	9.3	0.61	mg/kg dry wt.	100	USEPA-6020A	04/12/13 12:48	DSC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS217-0002 1304171-12

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:10

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	87	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR	1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS218-0002 1304171-13

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

85

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:15

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared:

04/11/13 By: ALK

Analyzed:

04/12/13

By: DWJ

Analytical Batch: 3D12027

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.27	0.20	0.055
208-96-8	Acenaphthylene	0.20U	0.20	0.049
120-12-7	Anthracene	0.92	0.20	0.047
56-55-3	Benzo(a)anthracene	2.0	0.20	0.033
50-32-8	Benzo(a)pyrene	1.8	0.20	0.027
*205-99-2	Benzo(b)fluoranthene	2.1	0.20	0.023
*207-08-9	Benzo(k)fluoranthene	1.1	0.20	0.023
191-24-2	Benzo(g,h,i)perylene	1.1	0.20	0.022
218-01- 9	Chrysene	2.1	0.20	0.046
*53-70-3	Dibenz(a,h)anthracene	0.22	0.20	0.023
206-44-0	Fluoranthene	3.9	0.20	0.053
86-73-7	Ruorene	0.25	0.20	0.048
193-39-5	Indeno(1,2,3-cd)pyrene	0.90	0.20	0.032
91-57-6	2-Methylnaphthalene	0.20U	0.20	0.054
91-20-3	Naphthalene	0.20U	0.20	0.066
85-01-8	Phenanthrene	3.0	0.20	0.048
129-00-0	Pyrene	5.0	0.20	0.051

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>60</i>	<i>35-100</i>
2-Fluorobiphenyl	· 71	<i>45</i> -105
o-Terphenyl	<i>72</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS218-0002 1304171-13

Matrix:

Soil

Percent Solids:

85

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:15

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	9.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:16 DSC 1	1303272
Lead	660	10	0.66	mg/kg dry wt.	100	USEPA-6020A	04/12/13 12:51 DSC 1	303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS218-0002 1304171-13

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:15

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	85	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR	1303262



Client:

TETRA TECH NUS - Pittsburgh

Work Order:

1304171

Project:

USCG Atwater Facility

Description:

112G02435

Client Sample ID: DASS219-0002

Sampled:

04/10/13 11:20

Lab Sample ID:

1304171-14

Sampled By:

Tetra Tech NUS

Matrix:

Soil

Unit: mg/kg dry Received: Prepared: 04/10/13 17:15

Dilution Factor:

Analyzed:

04/11/13 By: ALK By: ASC 04/12/13

QC Batch:

1303247

Percent Solids:

79

Analytical Batch: 3D12034

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL	
83-32-9	Acenaphthene	0.92	0.42	0.12	
208-96-8	Acenaphthylene	0.42U	0.42	0.10	
120-12-7	Anthracene	3.5	0.42	0.10	
56-55-3	Benzo(a)anthracene	. 7.0	0.42	0.069	
50-32-8	Benzo(a)pyrene	5.6	0.42	0.058	
*205- 99 -2	Benzo(b)fluoranthene	6.1	0.42	0.048	
*207-08-9	Benzo(k)fluoranthene	4.7	0.42	0.049	
191-24-2	Benzo(g,h,i)perylene	2.9	0.42	0.048	
218-01- 9	Chrysene	6.0	0.42	0.098	
*53-70-3	Dibenz(a,h)anthracene	0.64	0.42	0.048	
206-44-0	Fluoranthene	13	0.42	0.11	
86-73-7	Fluorene	1.4	0.42	0.10	
193-3 9- 5	Indeno(1,2,3-cd)pyrene	2.7	0.42	0.067	
*91-57-6	2-Methylnaphthalene	0.42U	0.42	0.11	
*91-20-3	Naphthalene	0.42U	0.42	0.14	
85-01-8	Phenanthrene	8.9	0.42	0.10	
129-00-0	Pyrene	14	0.42	0.11	

*See Statement of Data Qualifications



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS219-0002 1304171-14

Matrix:

Soil 79

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:20

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Arsenic	6.0	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:19 DSC 1303272
Lead	270	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/12/13 12:54 DSC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS219-0002 1304171-14

Lab Sample ID: Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:20

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC y Batch
Percent Solids	79	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BA	R 1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS220-0002 1304171-15

Matrix:

Soil

88

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303247

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:25

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared: Analyzed: 04/11/13 By: ALK

04/11/13

By: ASC

Analytical Batch: 3D12016

Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		MDL	
CAS Number	Analyte	Result	RL		
83-32 -9	Acenaphthene	0.061	0.019	0.0053	
208-96-8	Acenaphthylene	0.00683	0.019	0.0048	
120-12-7	Anthracene	0.25	0.019	0.0046	
56-55-3	Benzo(a)anthracene	0.38	0.019	0.0031	
50-32-8	Benzo(a)pyrene	0.27	0.019	0.0026	
*205-99-2	Benzo(b)fluoranthene	0.27	0.019	0.0022	
*207-08- 9	Benzo(k)fluoranthene	0.16	0.019	0.0022	
191-24-2	Benzo(g,h,i)perylene	0.13	0.019	0.0022	
218-01- 9	Chrysene	0.29	0.019	0.0044	
*53-70-3	Dibenz(a,h)anthracene	0.031	0.019	0.0022	
20 6-44- 0	Fluoranthene	0.61	0.019	0.0051	
86-73-7	Fluorene	0.091	0.019	0.0046	
193-39-5	Indeno(1,2,3-cd)pyrene	0.12	0.019	0.0031	
91-57-6	2-Methylnaphthalene	0.0068J	0.019	0.0052	
91-20-3	Naphthalene	0.019U	0.019	0.0064	
85-01-8	Phenanthrene	0.65	0.019	0.0047	
129-00-0	Pyrene	0.71	0.019	0.0049	

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>77</i>	<i>35-100</i>
2-Fluorobiphenyl	80	<i>45-105</i>
o-Terphenyl	<i>82</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS220-0002 1304171-15

Matrix:

Soil

Percent Solids:

88

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:25 Tetra Tech NUS

Sampled By:

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC by Batch
Arsenic	18	0.50	0.082	mg/kg dry wt.	5	USEPA-6020A	04/12/13 13:00 DS	SC 1303272
Lead	5900	100	6.6	mg/kg dry wt.	1000	USEPA-6020A	04/12/13 13:45 DS	SC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS220-0002 1304171-15

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:25

Sampled By: Received:

Tetra Tech NUS 04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By E	QC Batch
Percent Solids	88	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR 13	03262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS220-0002

Lab Sample ID:

1304171-15RE1

Matrix:

Soil 88

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:25

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Lead	13	0.50	0.033 п	ng/kg dry wt.	5	USEPA-6020A	04/16/13 10:38	MSM	1303384



Client:

TETRA TECH NUS - Pittsburgh

Project: **USCG Atwater Facility**

Lab Sample ID:

Client Sample ID: DASS221-0002 1304171-16

Matrix:

Soil

88

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303247

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:30

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared: Analyzed: 04/11/13 By: ALK

By: ASC 04/11/13

Analytical Batch: 3D12016

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.013J	0.019	0.0053
208-96-8	Acenaphthylene	0.00543	0.019	0.0048
120-12-7	Anthraœne	0.036	0.019	0.0046
56-55-3	Benzo(a)anthracene	0.11	0.019	0.0031
50-32-8	Benzo(a)pyrene	0.10	0.019	0.0026
*205- 99- 2	Benzo(b)fluoranthene	0.11	0.019	0.0022
*207-08- 9	Benzo(k)fluoranthene	0.084	0.019	0.0022
191-24-2	Benzo(g,h,i)perylene	0.066	0.019	0.0022
218-01-9	Chrysene	0.11	0.019	0.0044
53-70-3	Dibenz(a,h)anthracene	0.0173	0.019	0.0022
206-44-0	Fluoranthene	0.19	0.019	0.0051
*86-73-7	Fluorene	0.013J	0.019	0.0046
193-39-5	Indeno(1,2,3-cd)pyrene	0.051	0.019	0.0031
91-57-6	2-Methylnaphthalene	0.019U	0.019	0.0052
91-20-3	Naphthalene	0.019U	0.019	0.0064
85-01-8	Phenanthrene	0.13	0.019	0.0047
129-00-0	Pyrene	0.22	0.019	0.0049

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>78</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>80</i>	<i>45-105</i>
o-Terphenyl	<i>80</i>	<i>30-125</i>



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS221-0002

Lab Sample ID:

1304171-16

Matrix:

Soil 88

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:30

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	5.1	0.093	0.015	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:31	DSC	1303272
Lead	35	0.47	0.031	mg/kg dry wt.	5	USEPA-6020A	04/12/13 13:02	DSC	1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS221-0002 1304171-16

Matrix:

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:30

Sampled By: Received:

Tetra Tech NUS

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed E	QC y Batch
Percent Solids	88	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 B	AR 1303262



Client: TETRA TECH NUS - Pittsburgh

Project: USCG Atwater Facility

Client Sample ID: **DASS222-0002**Lab Sample ID: **1304171-17**

Matrix:

Soil

Unit: mg/kg dry

Dilution Factor: 10

QC Batch: 1303247

Percent Solids: 84

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:35

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared:

04/11/13 By: ALK

Analyzed:

04/12/13

By: DWJ

Analytical Batch: 3D12027

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL ·	MDL
83-32 -9	Acenaphthene	0.20U	0.20	0.055
208 -96-8	Acenaphthylene	0.20U	0.20	0.050
120-12-7	Anthracene	0.12J	0.20	0.048
*56-55-3	Benzo(a)anthracene	0.60	0.20	0.033
*50-32-8	Benzo(a)pyrene	0.72	0.20	0.027
*205-99-2	Benzo(b)fluoranthene	0.78	0.20	0.023
*207-08- 9	Benzo(k)fluoranthene	0.45	0.20	0.023
191-24-2	Benzo(g,h,i)perylene	0.44	0.20	0.022
*218-01- 9	Chrysene	0.62	0.20	0.046
*53-70-3	Dibenz(a,h)anthracene	0.0973	0.20	0.023
*206 -41- 0	Fluoranthene	0.89	0.20	0.053
*86-73-7	Fluorene	0.20U	0.20	0.048
193-39-5	Indeno(1,2,3-cd)pyrene	0.37	0.20	0.032
91-57-6	2-Methylnaphthalene	0.20U	0.20	0.054
*91-20-3	Naphthalene	0.20U	0.20	0.067
85-01-8	Phenanthrene	0.37	0.20	0.049
*129-00-0	Pyrene	1.1	0.20	0.051
	•			

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	<i>62</i>	<i>35-100</i>
2-Fluorobiphenyl	74	<i>45-105</i>
o-Terphenyl	<i>83</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS222-0002 1304171-17

Matrix:

Soil 84

Percent Solids:

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:35

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC by Batch
*Arsenic	5.9	0.094	0.015	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:34 D	SC 1303272
*Lead	720	19	1.2	mg/kg dry wt.	200	USEPA-6020A	04/12/13 13:48 D	SC 1303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS222-0002

Lab Sample ID: Matrix:

1304171-17

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:35

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By E	QC Batch
Percent Solids	84	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR 13	303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS223-0002

Lab Sample ID:

1304171-18

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

85

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:40

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared:

04/11/13 By: ALK

Analyzed:

04/12/13

By: DWJ

Analytical Batch: 3D12027

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.20U	0.20	0.054
208-96-8	Acenaphthylene	0.20U	0.20	0.049
120-12-7	Anthracene	0.22	0.20	0.047
56-55-3	Benzo(a)anthracene	1.4	0.20	0.032
50-32-8	Benzo(a)pyrene	1.3	0.20	0.027
*205-99-2	Benzo(b)fluoranthene	1.6	0.20	0.022
*207-08- 9	Benzo(k)fluoranthene	0.79	0.20	0.023
191-24-2	Benzo(g,h,i)perylene	0.70	0.20	0.022
218-01- 9	Chrysene	1.5	0.20	0.046
*53-70-3	Dibenz(a,h)anthracene	0.1 6 J	0.20	0.022
206-44-0	Fluoranthene	2.4	0.20	0.053
86-73-7	Fluorene	0.20U	0.20	0.047
193-39-5	Indeno(1,2,3-cd)pyrene	0.63	0.20	0.032
91-57-6	2-Methylnaphthalene	0.20U	0.20	0.054
*91-20-3	Naphthalene	0.20U	0.20	0.066
85-01-8	Phenanthrene	0.21	0.20	0.048
129-00-0	Pyrene	2.4	0.20	0.051

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	<i>57</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>62</i>	<i>45-105</i>
o-Temhenvi	<i>75</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS223-0002 1304171-18

Matrix:

Percent Solids:

Soil 85

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:40

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	4.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:48 DSC 13	303272
Lead	16	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/12/13 13:31 DSC 13	303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS223-0002

Matrix:

1304171-18

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 11:40

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	85	0.1	0.1	%	1	USEPA-3550C	04/11/13 13:40 BAR	1303262



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-FD-02 1304171-19

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

QC Batch:

1303247

Percent Solids:

84

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 00:00

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Prepared: Analyzed: 04/11/13 By: ALK 04/12/13

By: DWJ

Analytical Batch: 3D12027

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.21	0.20	0.055
208 -96-8	Acenaphthylene	0.0583	0.20	0.050
120-12-7	Anthracene	0.53	0.20	0.048
56-55-3	Benzo(a)anthracene	1.4	0.20	0.033
50-32-8	Benzo(a)pyrene	1.4	0.20	0.027
*205-99-2	Benzo(b)fluoranthene	1.6	0.20	0.023
*207-08-9	Benzo(k)fluoranthene	0.92	0.20	0.023
191-24-2	Benzo(g,h,i)perylene	0.86	0.20	0.022
218-01-9	Chrysene	1.2	0.20	0.046
*53-70-3	Dibenz(a,h)anthracene	0.19J	0.20	0.023
206-44-0	Fluoranthene	2.3	0.20	0.053
86-73-7	Fluorene	0.19J	0.20	0.048
193-39-5	Indeno(1,2,3-cd)pyrene	0.76	0.20	0.032
*91-57-6	2-Methylnaphthalene	0.20U	0.20	0.054
91-20-3	Naphthalene	0.20U	0.20	0.067
85-01-8	Phenanthrene	1.7	0.20	0.048
129-00-0	Pyrene	2.6	0.20	0.051

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>69</i>	<i>35-100</i>
2-Fluorobiphenyl	76	<i>45-105</i>
o-Terphenyl	<i>87</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-FD-02 1304171-19

Matrix:

Percent Solids:

Soil 84

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 00:00

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	4.8	0.092	0.015	mg/kg dry wt.	1	USEPA-6020A	04/12/13 11:51 DSC 1	1303272
Lead	470	9.2	0.61	mg/kg dry wt.	100	USEPA-6020A	04/12/13 13:34 DSC 1	303272



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-FD-02

Lab Sample Matrix: 1304171-19

Soil

Work Order:

1304171

Description:

112G02435

Sampled:

04/10/13 00:00

Sampled By:

Tetra Tech NUS

Received:

04/10/13 17:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor Method	Date Time QC Analyzed By Batch
Percent Solids	84	0.1	0.1	%	1 USEPA-3550C	04/11/13 13:40 BAR 1303262



Semivolatile Organic Compounds by EPA Method 8270C

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was less than 4 times the spiked amount; the non-spiked sample result is

Benzo(a)pyrene

considered estimated.

Analysis: USEPA-8270C

Sample/Analyte: 1304171-17 DASS222-0002

> 1304171-17 DASS222-0002 Benzo(b)fluoranthene

1304171-17 DASS222-0002 Chrysene 1304171-17 DASS222-0002 Pyrene

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is considered estimated.

Analysis: USEPA-8270C

Sample/Analyte: 1304171-01 DASB238-0305 Benzo(b)fluoranthene

> Phenanthrene DASB238-0305 1304171-01

Pyrene 1304171-01 DASB238-0305

1304171-17 DASS222-0002 Benzo(a)anthracene 1304171-17 DASS222-0002 Fluoranthene

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 1303247-MS1 Dibenz(a,h)anthracene

1303247-MS1 Indeno(1,2,3-cd)pyrene 1303247-MS2 Benzo(b)fluoranthene 1303247-MS2 Benzo(k)fluoranthene 1303247-MSD1 Benzo(b)fluoranthene Benzo(k)fluoranthene 1303247-MSD1 1303247-MSD2 Benzo(b)fluoranthene 1303247-MSD2 Benzo(k)fluoranthene

1303247-MSD2 Dibenz(a,h)anthracene 1304171-01 DASB238-0305 Benzo(b)fluoranthene 1304171-01 DASB238-0305 Benzo(k)fluoranthene 1304171-02 DASB239-0305 Benzo(b)fluoranthene 1304171-02 DASB239-0305 Benzo(k)fluoranthene Benzo(b)fluoranthene 1304171-03 DASB240-0305 Benzo(k)fluoranthene 1304171-03 DASB240-0305 1304171-03 DASB240-0305 Dibenz(a,h)anthracene

1304171-03 DASB240-0305 Naphthalene 1304171-04 DASB241-0305 2-Methylnaphthalene 1304171-04 DASB241-0305 Benzo(b)fluoranthene Benzo(k)fluoranthene 1304171-04 DASB241-0305 1304171-05 Benzo(a)pyrene DASB242-0305 1304171-05 DASB242-0305 Benzo(b)fluoranthene

Benzo(k)fluoranthene 1304171-05 DASB242-0305 Indeno(1,2,3-cd)pyrene 1304171-05 DASB242-0305 Nitrobenzene-d5 1304171-05 DASB242-0305

1304171-06 DASB243-0305 Benzo(b)fluoranthene Benzo(k)fluoranthene 1304171-06 DASB243-0305

Page 60 of 66



Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

DASS214-0002

DASS214-0002

DASS214-0002

DASS214-0002

DASS214-0002

DASS214-0002

DASS215-0002

DASS215-0002

DASS215-0002

DASS215-0002

DASS215-0002

DASS215-0002

DASS216-0002

DASS216-0002

DASS216-0002

DASS216-0002

DASS217-0002

DASS217-0002

DASS217-0002

DASS218-0002

DASS218-0002

DASS218-0002

DASS219-0002

DASS219-0002

DASS219-0002

DASS219-0002

DASS219-0002

DASS220-0002

DASS220-0002

DASS220-0002

DASS221-0002

DASS221-0002

DASS221-0002

DASS222-0002

DASS222-0002

DASS222-0002

DASS222-0002

Analysis: USEPA-8270C

1304171-09

1304171-09

1304171-09

1304171-09 1304171-09

1304171-09

1304171-10

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1304171-14

1304171-15

1304171-15

1304171-15

1304171-16

1304171-16

1304171-16

1304171-17

1304171-17

1304171-17

Sample/Analyte:	1304171-06	DASB243-0305	Dibenz(a,h)anthracene
	1304171-07	DASB-FD-01	Benzo(b)fluoranthene

130 (1/1 0)	בס מו מכחמ	DC1120(D)110010110110110
1304171-07	DASB-FD-01	Benzo(k)fluoranthene
1304171-07	DASB-FD-01	Dibenz(a,h)anthracene
1304171-08	DASS213-0002	2-Methylnaphthalene
1304171-08	DASS213-0002	Acenaphthylene
1304171-08	DASS213-0002	Benzo(b)fluoranthene
1304171-08	DASS213-0002	Benzo(k)fluoranthene
1304171-08	DASS213-0002	Fluorene

2-Methylnaphthalene

Anthracene

Benzo(b)fluoranthene Benzo(k)fluoranthene

Chrysene Nitrobenzene-d5

Anthracene

Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene

Chrysene

Nitrobenzene-d5

Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Benzo(b)fluoranthene

Benzo(k)fluoranthene

Fluorene

Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenz(a,h)anthracene

2-Methylnaphthalene Benzo(b)fluoranthene

Benzo(k)fluoranthene Dibenz(a,h)anthracene

Naphthalene

Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenz(a,h)anthracene Benzo(b)fluoranthene

Benzo(k)fluoranthene

Fluorene

Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenz(a,h)anthracene

Fluorene Naphthalene Nitrobenzene-d5

1304171-17

1304171-17 DASS222-0002 1304171-17 DASS222-0002

Page 61 of 66



Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 1304171-18 DASS223-0002 Benzo(b)fluoranthene

1304171-18 DASS223-0002 Benzo(k)fluoranthene 1304171-18 DASS223-0002 Dibenz(a,h)anthracene

1304171-18 DASS223-0002 Naphthalene Nitrobenzene-d5 1304171-18 DASS223-0002 DASB-FD-02 2-Methylnaphthalene 1304171-19 1304171-19 DASB-FD-02 Benzo(b)fluoranthene 1304171-19 DASB-FD-02 Benzo(k)fluoranthene 1304171-19 DASB-FD-02 Dibenz(a,h)anthracene

Qualification: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-8270C

Sample: 1304171-09 DASS214-0002

1304171-10 DASS215-0002 1304171-11 DASS216-0002 1304171-12 DASS217-0002 1304171-17 DASS222-0002 1304171-18 DASS223-0002

Qualification: Surrogate results are unavailable due to positive results in the sample, resulting in a dilution.

Surrogate concentrations were diluted below the calibration range.

Analysis: USEPA-8270C

Sample: 1304171-06 DASB243-0305

1304171-14 DASS219-0002

Qualification: Surrogate results are unavailable due to sample matrix interference(s), resulting in a dilution.

Surrogate concentrations were diluted below the calibration range.

Analysis: USEPA-8270C

Sample: 1304171-12 DASS217-0002



Total Metals by EPA 6000/7000 Series Methods

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was less than 4 times the spiked amount; the non-spiked sample result is

considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 1304171-17

DASS222-0002

Arsenic

Qualification: The RPD between the MS and MSD results exceeded the control limit. The non-spiked sample

concentration for the same analyte was less than 4 times the spiked amount; the non-spiked

sample result is considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 1304171-17

DASS222-0002

Arsenic

Qualification: Matrix QC results are not available due to sample dilution.

Analysis: USEPA-6020A

Sample/Analyte: 1304171-17

DASS222-0002

Lead

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was greater than or equal to 4 times the spiked amount; matrix QC results are

not available.

Analysis: USEPA-6020A

Sample/Analyte: 1304171-01

DASB238-0305

Lead

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc. Individual sample results relate only to the sample tested.

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TRIMATRIX LABORATORIES



SAMPLE RECEIVING / LOG-IN CHECKLIST										
TRIMATRIX LETRA	TECH NOTHER TO	130:471								
LABORATORIES Recept Record Regardine	-) Tologic persis Sample	5 T-S								
Recorded by (initials/date) On Recorded by (initials/date)	ved 32 R Gun (#202)									
N 4-10-13 □ Other ~	Thermometer Used O Digital Thermom	ater (#S4) See Additional Cooler Information Form								
117/5967758 771/2257803	Cooter # Time	Cookir# Time								
Custody Seals: Custody Seals:	Custody Séals:	Custody Seals:								
	None	☐ Nicona								
Present / Not intect Present / Not intect	Present / Intact	Present / Intact								
Coolant Location: Coolant Location;	Cootent Location:	Coolant Location:								
Dispersed / Top / Middle / Bottom Dispersed / Top / Middle / Bottom	Dispersed / Top / Middle / Bottom	Dispersed / Top / Middle / Bottom								
Coolant/Temperature Taken Via: Coolant/Temperature Taken Via:	Contant Temperature Taken Via:	Coolant/Temperature Taken Vie:								
Loope to: / Avg 2-3 containers Cope to: / Avg 2-3 containers Bagged to: / Avg 2-3 containers Bagged to: / Avg 2-3 containers	Loose ice / Avg 2-3 containers Espace ice / Avg 2-3 containers	Loose to Avg 2-3 containers								
O Blue too / Avg 2/3 containers	Blue les / Avg 2-3 containers Blue les / Avg 2-3 contigeners	☐ Bagged Ice / Avg 2-3 containers ☐ Bue Ice / Avg 2-3 containers								
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Alternate Temperature Takon Vis: Alternate Temperature Taken Vis:	Alternate Temperature Taken Via:	Anomate Temperature Taken Via:								
Temperature Blank (TB) 1. Container 1. Container	Temperature Blank (TB)	☐ Temperature Stank (TB) ☐ 1 Container								
Recorded C Correction Actual C Recorded C Correction Actual C Recorded C Factor C	Committee	Recorded C Correction Actual C								
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Too an Asia too tee	<u> </u>									
If any shaded areas checked, complete Sample. Paperwork Received		r Inventory Form								
Yes No.	Check Sample Preservation									
Chain of Custody record(s)? If No. Initiated By	Average sample	emperature 45° C?								
Received for Lab Signed/Date/Time?	□ Wes thermal pre-									
Corper document?	The state of the s	remist Approval initials: a Non Cor Opeler - Cont Inventory Form?								
COC Information	Completed Samp	e Preservation Verification Form?								
COC D Numbers: # 2313 + #3384	Samples chamics	illy preserved correctly?								
COC & Numbers: # 2283 - #2284	If "No", edded one									
	Received pre-pre	□ Ne ₃ SO.								
Check COC for Accuracy	Check for Short Hold-Time Prop/A									
Yes No D Anstylis Requested?	☐ Bacterlological									
Analysis Requested? Sample 19 matches COC?	Air Bags D EnCores / Methanol Pre-Preserved	AFTER HOURS ONLY: COPIES OF COC TO LAB AREA(S)								
Sample Date and Time matches COC?	G Formeldehyda/Aldehyde	D NONE RECEIVED								
Container type completed on COC?	Great-tagged containers	RECEIVED, COCS TO LAB(S)								
All contains types indicated are received? Sample Condition Summary	Vellow/White-tagged 1L ambers (SV Po	co-Lab)								
N/A Yas No.	P Water Bases B									
Broken containers/acs?										
Missing or incomplate tabels? Illegible (information on lebels?										
Low volume received?	☐ Trop Blank received ☐ Trop St	sak not listed an COC								
Inappropriate or non-Tribletrox conseiners received?		Dezvered (DisterTime) S1 Hour Goal Met?								
O VOC visits / TOX contrainers have headspace?	DN14-12-15 2	/-/n /3 Yes / No								
Extra sample locations / containers not listed on COC?	TO VIV JULLE T									

Log in Forms - Receiving Log-in_Checklet

revision: 3.



April 15, 2013

TETRA TECH NUS - Pittsburgh Attn: Mr. Joe Logan 661 Anderson Drive, Foster Plaza 7 Pittsburgh, PA 15220

Project: USCG Atwater Facility

Dear Mr. Joe Logan,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order

Received

Description

1304185

04/11/2013

Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/12-056-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#83658); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood Project Chemist



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASS201-0002 1304185-01

Lab Sample ID: Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

5

QC Batch: Percent Solids: 1303302

81

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 07:50

Sampled By:

Client

Received:

04/11/13 19:15 By: JTS

Prepared: Analyzed: 04/12/13 04/12/13

By: ASC

Analytical Batch: 3D12034

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
*83-32-9	Acenaphthene	0.10U	0.10	0.029
208-96-8	Acenaphthylene	0.10U	0.10	0.026
120-12-7	Anthracene	0.0553	0.10	0.025
56-55-3	Benzo(a)anthracene	0.27	0.10	0.017
50-32-8	Benzo(a)pyrene	0.23	0.10	0.014
*205-99-2	Benzo(b)fluoranthene	0.28	0.10	0.012
*207-08-9	Benzo(k)fluoranthene	0.18	0.10	0.012
191-2 4- 2	Benzo(g,h,i)perylene	0.11	0.10	0.012
218-01-9	Chrysene	0.26	0.10	0.024
*53-70-3	Dibenz(a,h)anthracene	0.0263	0.10	0.012
206-44-0	Fluoranthene	0.42	0.10	0.028
*86-73-7	Fluorene	0.028J	0.10	0.025
193-39-5	Indeno(1,2,3-cd)pyrene	0.095J	0.10	0.017
91-57-6	2-Methylnaphthalene	0.10U	0.10	0.028
91-20-3	Naphthalene	0.10U	0.10	0.035
85-01-8	Phenanthrene	0.28	0.10	0.025
129-00-0	Pyrene	0.49	0.10	0.027

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	<i>66</i>	<i>35-100</i>
2-Fluorobiphenyl	68	<i>45-105</i>
o-Terphenyl	<i>76</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS201-0002 1304185-01

Matrix:

Soil

Percent Solids: 81 Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 07:50

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed I	QC By Batch
Arsenic	6.7	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 09:54 E	DSC 1303314
Lead	66	1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	04/15/13 10:49 D	DSC 1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS201-0002 1304185-01

Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 07:50

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor Med	ethod	Date Time Analyzed	Ву	QC Batch
Percent Solids	81	0.1	0.1	%	1 USE	EPA-3550C	04/12/13 13:30	BAR	1303324



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS202-0002 1304185-02

Matrix:

Soil

79

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303302

Percent Solids:

Received: Prepared:

Analyzed:

Work Order:

Description:

Sampled By:

Sampled:

04/11/13 19:15

04/11/13 07:55

Laboratory Services

1304185

04/12/13

Client

By: JTS 04/12/13 By: ASC

Analytical Batch: 3D12034

Semivolatile Organic Compounds by EPA Method 8270C

		Analytical			
CAS Number	Analyte	Result	RL	MDL	
83-32 -9	Acenaphthene	0.26	0.11	0.029	
208-96-8	Acenaphthylene	0.11U	0.11	0.026	
120-12-7	Anthracene	0.68	0.11	0.025	
56-55-3	Benzo(a)anthracene	0.82	0.11	0.017	
50-32-8	Benzo(a)pyrene	0.64	0.11	0.014	
*205- 99 -2	Benzo(b)fluoranthene	0.76	0.11	0.012	
*207-08- 9	Benzo(k)fluoranthene	0.46	0.11	0.012	
191-24-2	Benzo(g,h,i)perylene	0.27	0.11	0.012	
218-01 -9	Chrysene	0.91	0.11	0.025	
53-70-3	Dibenz(a,h)anthracene	0.11	0.11	0.012	
206-44-0	Fluoranthene	1.6	0.11	0.028	
86-73-7	Huorene	0.37	0.11	0.025	
193-39-5	Indeno(1,2,3-cd)pyrene	0.26	0.11	0.017	
*91-57 - 6	2-Methyinaphthalene	0.0373	0.11	0.029	
*91-20-3	Naphthalene	0.052J	0.11	0.035	
85-01-8	Phenanthrene	1.9	0.11	0.026	
129-00-0	Pyrene	1.6	0.11	0.027	

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	64	<i>35-100</i>
2-Fluorobiphenyl	<i>70</i>	45-105
o-Terphenvi	74	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS202-0002 1304185-02

Lab Sample ID: Matrix:

Soil 79

Percent Solids:

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 07:55

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	6.3	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 09:57	DSC	1303314
Lead	39	0,50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/15/13 10:52	DSC	1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS202-0002 1304185-02

Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services 04/11/13 07:55

Sampled: Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Percent Solids	. 79	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 E	AR 1303324



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS203-0002

Lab Sample ID:

1304185-03

mg/kg dry

Matrix: Unit:

Soil

Dilution Factor:

QC Batch:

1303302

Percent Solids: 83 Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:00

Sampled By:

Client

Received: Prepared:

Analyzed:

04/11/13 19:15 By: JTS

04/12/13 04/12/13

By: ASC

Analytical Batch: 3D12034

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32- 9	Acenaphthene	0.10U	0.10	0.028
*208-96-8	Acenaphthylene	0.10U	0.10	0.025
*120-12-7	Anthracene	0.0933	0.10	0.024
56-55-3	Benzo(a)anthracene	0.22	0.10	0.017
50-32-8	Benzo(a)pyrene	0.20	0.10	0.014
*205-99-2	Benzo(b)fluoranthene	0.23	0.10	0.011
*207-08-9	Benzo(k)fluoranthene	0.14	0.10	0.012
191-24-2	Benzo(g,h,i)perylene	0.0973	0.10	0.011
218-01-9	Chrysene	0.24	0.10	0.023
*53-70-3	Dibenz(a,h)anthracene	0.022J	0.10	0.011
206-44-0	Fluoranthene	0.41	0.10	0.027
86-73-7	Fluorene	0.10U	0.10	0.024
193-39-5	Indeno(1,2,3-cd)pyrene	0.0813	0.10	0.016
91-57-6	2-Methylnaphthalene	0.10U	0.10	0.027
91-20-3	Naphthalene	0.10U	0.10	0.034
85-01-8	Phenanthrene	0.21	0.10	0.025
129-00-0	Pyrene	0.44	0.10	0.026

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>54</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>68</i>	<i>45-105</i>
o-Terphenyl	<i>70</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS203-0002

Lab Sample ID:

1304185-03

Matrix: Percent Solids: Soil 83

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:00

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	5.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:00	DSC	1303314
Lead	29	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/15/13 11:01	DSC	1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS203-0002

Lab Sample ID: Matrix:

1304185-03 Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:00

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	83	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR	1303324



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS204-0002

Lab Sample ID:

1304185-04

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303302

Percent Solids:

79

Work Order:

1304185

Description:

Laboratory Services 04/11/13 08:05

Sampled: Sampled By:

Client

Received:

04/11/13 19:15

Prepared: Analyzed:

04/12/13 By: JTS

04/12/13

By: ASC

Analytical Batch: 3D12034

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
*83-32- 9	Acenaphthene	0.11U	0.11	0.029
208-96-8	Acenaphthylene	0.11U	0.11	0.026
*120-12-7	Anthracene	0.0783	0.11	0.025
56-55- 3	Benzo(a)anthracene	0.18	0.11	0.017
50-32-8	Benzo(a)pyrene	0.18	0.11	0.015
*205 -9 9-2	Benzo(b)fluoranthene	0.23	0.11	0.012
*207-08- 9	Benzo(k)fluoranthene	0.11	0.11	0.012
191-24-2	Benzo(g,h,i)perylene	0.11J	0.11	0.012
218-01 <i>-</i> 9	Chrysene	0.22	0.11	0.025
*53-70-3	Dibenz(a,h)anthracene	0.021.J	0.11	0.012
206 -44- 0	Fluoranthene	0.31	0.11	0.028
*86-73-7	Fluorene	0.11U	0.11	0.025
193-39-5	Indeno(1,2,3-cd)pyrene	0.088J	0.11	0.017
91-57-6	2-Methylnaphthalene	0.11U	0.11	0.029
91-20-3	Naphthalene	0.11U	0.11	0.035
85-01-8	Phenanthrene	0.17	0.11	0.026
129-00-0	Pyrene	0.36	0.11	0.027

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>68</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>79</i>	<i>45-105</i>
o-Terphenvl	<i>78</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS204-0002 1304185-04

Matrix:

Soil 79

Percent Solids:

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:05

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	6.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:03	DSC	1303314
Lead	40	1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	04/15/13 11:04	DSC	1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS204-0002

Lab Sample ID: Matrix:

1304185-04 Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:05

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Bato	
Percent Solids	79	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 13033	24



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS205-0002 1304185-05

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

5

QC Batch:

1303302

82

Percent Solids:

Work Order:

Sampled:

Received:

Prepared:

1304185

Description: **Laboratory Services**

04/11/13 08:10

Sampled By:

Client

04/11/13 19:15 04/12/13 By: JTS

Analyzed:

04/12/13 By: ASC

Analytical Batch: 3D12034

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.23	0.10	0.028
208-96-8	Acenaphthylene	0.10U	0.10	0.025
120-12-7	Anthraœne	0.51	0.10	0.024
56-55-3	Benzo(a)anthracene	0.89	0.10	0.017
50-32-8	Benzo(a)pyrene	0.74	0.10	0.014
*205- 99 -2	Benzo(b)fluoranthene	0.95	0.10	0.012
* 207-08-9	Benzo(k)fluoranthene	0.50	0.10	0.012
191-24-2	Benzo(g,h,i)perylene	0.35	0.10	0.012
218-01-9	Chrysene	0.84	0.10	0.024
*53-70-3	Dibenz(a,h)anthracene	0.084]	0.10	0.012
206-44-0	Fluoranthene	1.5	0.10	0.027
*86-73-7	Fluorene	0.19	0.10	0.025
193-39-5	Indeno(1,2,3-cd)pyrene	0.32	0.10	0.016
*91-57 - 6	2-Methylnaphthalene	0.081J	0.10	0.028
*91-20-3	Naphthalene	0.42	0.10	0.034
85-01-8	Phenanthrene	1.5	0.10	0.025
129-00-0	Pyrene	1.8	0.10	0.026

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>68</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>78</i>	<i>45-105</i>
o-Terphenyl	<i>76</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS205-0002

Matrix:

1304185-05

Percent Solids:

Soil . 82

Work Order:

1304185

Description:

Laboratory Services

Sampled: Sampled By: 04/11/13 08:10

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch	
Arsenic	6.1	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:06	DSC 130331	L4
Lead	21	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/15/13 11:07	DSC 130331	14



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS205-0002 1304185-05

Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled: Sampled By: 04/11/13 08:10

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	82	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 1303324



Client:

TETRA TECH NUS - Pittsburgh

Work Order:

1304185

Project:

USCG Atwater Facility

Description: Sampled:

Laboratory Services 04/11/13 08:20

Lab Sample ID:

Client Sample ID: DASS206-0002 1304185-06

Sampled By:

Client

Matrix: Unit:

Soil

Received:

04/11/13 19:15

mg/kg dry

Prepared: Analyzed:

04/12/13 By: JTS

Dilution Factor:

5

By: ASC

QC Batch: Percent Solids:

1303302 78

04/12/13

Analytical Batch: 3D12034

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
*83-32-9	Acenaphthene	0.0353	0.11	0.030
208 -96- 8	Acenaphthylene	0.11U	0.11	0.027
*120-12-7	Anthracene	0.18	0.11	0.026
56-55-3	Benzo(a)anthracene	0.29	0.11	0.018
50-32-8	Benzo(a)pyrene	0.26	0.11	0.015
*205- 99 -2	Benzo(b)fluoranthene	0.35	0.11	0.012
*207-08-9	Benzo(k)fluoranthene	0.21	0.11	0.013
191-24-2	Benzo(g,h,i)perylene	0.13	0.11	0.012
218-01- 9	Chrysene	0.35	0.11	0.025
53-70-3	Dibenz(a,h)anthracene	0.0553	0.11	0.012
206-44-0	Fluoranthene	0.49	0.11	0.029
*86-73-7	Fluorene	0.0573	0.11	0.026
193-39-5	Indeno(1,2,3-cd)pyrene	0.103	0.11	0.017
91-57-6	2-Methylnaphthalene	0.11U	0.11	0.029
*91-20-3	Naphthalene	0.11U	0.11	0.036
85-01-8	Phenanthrene	0.41	0.11	0.026
129-00-0	Pyrene	0.57	0.11	0.028

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	<i>62</i>	<i>35</i> -100
2-Fluorobiphenyl	· 68	<i>45-105</i>
o-Terphenyl	<i>70</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS206-0002

Lab Sample ID: Matrix:

1304185-06

Percent Solids:

Soil 78

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:20

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	8.9	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:09	DSC	1303314
Lead	410	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/15/13 11:09	DSC	1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS206-0002

1304185-06

Lab Sample ID: Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:20

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	78	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR	1303324



Client: TETRA TECH NUS - Pittsburgh

Project: USCG Atwater Facility
Client Sample ID: **DASS207-0002**

Lab Sample ID: 1304185-07

Matrix:

Soil

Unit: mg/kg dry

Dilution Factor: 1

QC Batch: 1303302

Percent Solids: 85

Work Order: 1304185

Description: Laboratory Services

Sampled: 04/11/13 08:25

Sampled By: Client

Received: 04/11/13 19:15 Prepared: 04/12/13 By: JTS

Analyzed: 04/12/13 By: ASC

Analytical Batch: 3D12034

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL .	MDL
83-32-9	Acenaphthene	0.016J	0.020	0.0054
208-96-8	Acenaphthylene -	0.014J	0.020	0.0049
120-12-7	Anthracene	0.057	0.020	0.0047
56-55-3	Benzo(a)anthracene	0.26	0.020	0.0032
50-32-8	Benzo(a)pyrene	0.20	0.020	0.0027
*205- 99 -2	Benzo(b)fluoranthene	0.23	0.020	0.0022
*207-08- 9	Benzo(k)fluoranthene	0.12	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.093	0.020	0.0022
218-01- 9	Chrysene	0.22	0.020	0.0046
*53-70-3	Dibenz(a,h)anthracene	0.025	0.020	0.0022
206 -44- 0	Fluoranthene	0.31	0.020	0.0052
86-73-7	Fluorene	0.020	0.020	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	0.089	0.020	0.0031
*91-57-6	2-Methylnaphthalene	0.00673	0.020	0.0053
*91-20-3	Naphthalene	0.020U	0.020	0.0066
85-01-8	Phenanthrene	0.20	0.020	0.0048
129-00-0	Pyrene	0.41	0.020	0.0050

Surrogates:	% Recovery	Control Limit
Nitrobenzene-d5	<i>79</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>84</i>	<i>45-105</i>
o-Terphenyl	<i>77</i>	<i>30-125</i>

*See Statement of Data Qualifications

Page 20 of 43



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASS207-0002

Lab Sample ID:

1304185-07

Matrix:

Soil

Percent Solids: 85 Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:25

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	6.1	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:24 DSC	1303314
Leád	99	2.5	0.16	mg/kg dry wt.	25	USEPA-6020A	04/15/13 11:12 DSC	1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS207-0002 1304185-07

Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:25

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL.	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	85	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 1303324



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASB224-0507

Lab Sample ID:

1304185-08

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

1

QC Batch:

1303302

Percent Solids:

85

Work Order: 1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:50

Sampled By:

Client

Received:

04/11/13 19:15 By: JTS

Prepared:

04/12/13

By: ASC

Analyzed:

04/12/13

Analytical Batch: 3D12034

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL.	MDL
83-32 -9	Acenaphthene	0.0153	0.020	0.0055
208-96-8	Acenaphthylene	0.020U	0.020	0.0049
120-12-7	Anthracene	0.0143	0.020	0.0047
56-55-3	Benzo(a)anthracene	0.041	0.020	0.0033
50-32-8	Benzo(a)pyrene	0.033	0.020	0.0027
*205- 99- 2	Benzo(b)fluoranthene	0.039	0.020	0.0023
*207-08-9	Benzo(k)fluoranthene	0.019J	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.020	0.020	0.0022
218-01-9	Chrysene	0.039	0.020	0.0046
*53-70-3	Dibenz(a,h)anthracene	0.0037J	0.020	0.0023
206-44-0	Fluoranthene	0.067	0.020	0.0053
86-73-7	Fluorene	0.00693	0.020	0.0048
*193-39-5	Indeno(1,2,3-cd)pyrene	0.013J	0.020	0.0032
* 91-57 -6	2-Methylnaphthalene	0.020U	0.020	0.0054
*91-20-3	Naphthalene	0.020U	0.020	0.0066
85-01-8	Phenanthrene	0.058	0.020	0.0048
129-00-0	Pyrene	0.081	0.020	0.0051

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>77</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>78</i>	<i>45-105</i>
o-Terphenyl	<i>73</i>	<i>30-125</i>

*See Statement of Data Qualifications

Page 23 of 43



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Circle Sample II

Client Sample ID: DASB224-0507

Lab Sample ID:

1304185-08

Matrix: Percent Solids: Soil 85 Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:50

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Arsenic	5.1	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:12 DSC 1303314
Lead	63	1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	04/15/13 11:15 DSC 1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB224-0507 1304185-08

Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:50

Sampled By:

Client

Received:

04/11/13 19:15

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	85	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 1303324

Grand Panids MI 49512 • 616 975 4500 • Fax 616 942 7463 • www.trimatrixlabs.com



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB225-0507 1304185-09

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

1

QC Batch:

1303302

Percent Solids: 79 Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:55

Sampled By:

Client

Received:

04/11/13 19:15

Prepared:

04/12/13

By: JTS

Analyzed:

04/12/13 By: ASC

Analytical Batch: 3D12034

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32 -9	Acenaphthene	0.19	0.021	0.0059
208-96-8	Acenaphthylene	0.00613	0.021	0.0053
120-12-7	Anthracene	0.037	0.021	0.0051
56-55-3	Benzo(a)anthracene	0.067	0.021	0.0035
50-32-8	Benzo(a)pyrene	0.066	0.021	0.0029
*205 -99 -2	Benzo(b)fluoranthene	0.071	0.021	0.0024
*207-08-9	Benzo(k)fluoranthene	0.037	0.021	0.0025
191-24-2	Benzo(g,h,i)perylene	0.034	0.021	0.0024
218-01-9	Chrysene	0.063	. 0.021	0.0049
53-70-3	Dibenz(a,h)anthracene	0.00703	0.021	0.0024
206-44-0	Fluoranthene	0.13	0.021	0.0057
86-73-7	Fluorene	0.068	0.021	0.0051
193-39-5	Indeno(1,2,3-cd)pyrene	0.032	0.021	0.0034
*91-57-6	2-Methylnaphthalene	0. 02 1U	0.021	0.0058
91-20-3	Naphthalene	0.018J	0.021	0.0071
85-01-8	Phenanthrene	0.090	0.021	0.0052
129-00-0	Pyrene	0.15	0.021	0.0055

Surrogates:	% Recovery	Control Limit
Nitrobenzene-d5	<i>75</i>	<i>35-100</i>
2-Fluorobiphenyl	. <i>76</i>	<i>45-105</i>
a-Tembenyl	74	30-125



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB225-0507 1304185-09

Matrix:

Percent Solids:

Soil 79

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:55

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Arsenic	2.6	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:15 DSC 1303314
Lead	31	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/15/13 11:18 DSC 1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB225-0507

Lab Sample ID: Matrix:

1304185-09

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 08:55

04/11/13 19:15

Sampled By:

Client

Received:

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	79	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 1303324



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Lab Sample ID:

1304185-10

Matrix:

Soil

Client Sample ID: DASB226-0507

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303302 76

Percent Solids:

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 09:00

Sampled By:

Client

Received: Prepared:

Analyzed:

04/11/13 19:15

04/12/13

By: JTS

04/12/13

By: DWJ

Analytical Batch: 3D15022

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL	
83-32-9	Acenaphthene	0.15	0.11	0.030	
208- 9 6-8	Acenaphthylene	0.11U	0.11	0.027	
120-12-7	Anthracene	0.32	0.11	0.026	
56-55-3	Benzo(a)anthracene	0.41	0.11	0.018	
50-32-8	Benzo(a)pyrene	0.30	0.11	0.015	
*205- 99 -2	Benzo(b)fluoranthene	0.34	0.11	0.013	
*207-08-9	Benzo(k)fluoranthene	0.17	0.11	0.013	
191-24-2	Benzo(g,h,i)perylene	0.16	0.11	0.012	
218-01-9	Chrysene	0.35	0.11	0.026	
*53-70-3	Dibenz(a,h)anthracene	0.038J	0.11	0.013	
206-44-0	Fluoranthene	0.98	0.11	0.029	
86-73-7	Fluorene	0.113	0.11	0.026	
193-39-5	Indeno(1,2,3-cd)pyrene	0.14	0.11	0.018	
*91-57 - 6	2-Methylnaphthalene	0.11U	0.11	0.030	
*91-20-3	Naphthalene	0.0403	0.11	0.037	
85-01-8	Phenanthrene	0.50	0.11	0.027	
129-00-0	Pyrene	0.97	0.11	0.028	

Surrogates:	% Recovery	Control Limits
* Nitrobenzene-d5	66	<i>35-100</i>
2-Fluorobiphenyl	· 75	<i>45-105</i>
o-Terphenyl	<i>75</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

- L C--- I TO

Client Sample ID: DASB226-0507

Lab Sample ID:

1304185-10

Matrix: Percent Solids: Soil 76 Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 09:00

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	4.2	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:29	DSC 1303314
Lead	35	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/15/13 11:21	DSC 1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB226-0507 1304185-10

Lab Sample ID: Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 09:00

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	76	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 1303324



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASB227-0507

Lab Sample ID:

1304185-11

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

1 1303302 84

QC Batch: Percent Solids: Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 09:05

Sampled By:

Client

Received:

04/11/13 19:15

Prepared:

04/12/13 By: JTS

Analyzed:

04/12/13 By: ASC

Analytical Batch: 3D12034

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL.	MDL
83-32-9	Acenaphthene	0.034	0.020	0.0055
208-96-8	Acenaphthylene	0.012J	0.020	0.0050
*120-12-7	Anthracene	0.064	0.020	0.0048
*56-55-3	Benzo(a)anthracene	0.21	0.020	0.0033
50-32-8	Benzo(a)pyrene	0.18	0.020	0.0027
*205-9 9- 2	Benzo(b)fluoranthene	0.22	0.020	0.0023
*207-08-9	Benzo(k)fluoranthene	0.12	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.084	0.020	0.0022
*218-01 - 9	Chrysene	0.19	0.020	0.0046
*53-70-3	Dibenz(a,h)anthracene	0.019J	0.020	0.0023
*20 6-44- 0	Fluoranthene	0.33	0.020	0.0053
86-73-7	Fluorene	0.051	0.020	0.0048
193-39-5	Indeno(1,2,3-cd)pyrene	0.082	0.020	0.0032
91-57- 6	2-Methylnaphthalene	0.013J	0.020	0.0054
91-20-3	Naphthalene	0.0163	0.020	0.0067
*85-01-8	Phenanthrene	0.23	0.020	0.0049
*129-00-0	Pyrene	0.40	0.020	0.0051

Surrogates:	% Recovery	Control Limits		
Nitrobenzene-d5	<i>78</i>	<i>35-100</i>		
2-Fluorobiphenyl	<i>84</i>	45-105		
o-Terphenyl	<i>82</i>	<i>30-125</i>		



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASB227-0507

Lab Sample ID:

1304185-11

Matrix: Percent Solids: Soil 84

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 09:05

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	5.9	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:32	DSC	1303314
*Lead	72	1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	04/15/13 11:24	DSC	1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB227-0507

Lab Sample ID: Matrix:

1304185-11 Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 09:05

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	84	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 1303324



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-FD-03 1304185-12

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303302

Percent Solids:

83

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By:

Client

Received:

Analyzed:

04/11/13 19:15

Prepared:

04/12/13

By: JTS

04/12/13

By: DWJ

Analytical Batch: 3D15022

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Annheo	Analytical Result	RL .	MDI
CAS Number	Analyte	Kesuit	- KL	MDL
83-32 -9	Acenaphthene	0.064J	0.10	0.028
208-96-8	Acenaphthylene	0.046J	0.10	0.025
120-12-7	Anthraœne	0.47	0.10	0.024
56-55-3	Benzo(a)anthracene	0.92	0.10	0.017
50-32-8	Benzo(a)pyrene	0.63	0.10	0.014
*205- 99- 2	Benzo(b)fluoranthene	0.81	0.10	0.011
*207-08-9	Benzo(k)fluoranthene	0.40	0.10	0.012
191-24-2	Benzo(g,h,i)perylene	0.30	0.10	0.011
218-01- 9	Chrysene	0.79	0.10	0.023
53-70-3	Dibenz(a,h)anthracene	0.12	0.10	0.011
206-44-0	Fluoranthene	1.7	0.10	0.027
86-73-7	Fluorene	0.12	0.10	0.024
193-39-5	Indeno(1,2,3-cd)pyrene	0.29	0.10	0.016
*91-57 -6	2-Methylnaphthalene	0.10U	0.10	0.027
*91-20-3	Naphthalene	0.10U	0.10	0.034
85-01-8	Phenanthrene	1.5	0.10	0.025
129-00-0	Pyrene	1.9	0.10	0.026

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>68</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>75</i>	<i>45-105</i>
o-Tembenyl	<i>7</i> 3	30-125

*See Statement of Data Qualifications

Page 35 of 43



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB-FD-03 Lab Sample ID:

1304185-12

Matrix: Percent Solids:

Soil 83

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	5.3	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/15/13 10:46	DSC	1303314
Lead	29	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/15/13 11:50	DSC	1303314



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB-FD-03 Lab Sample ID:

1304185-12

Matrix:

Soil

Work Order:

1304185

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By:

Client

Received:

04/11/13 19:15

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	83	0.1	0.1	%	1	USEPA-3550C	04/12/13 13:30 BAR 1303324



Semivolatile Organic Compounds by EPA Method 8270C

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was less than 4 times the spiked amount; the non-spiked sample result is

considered estimated.

Analysis: USEPA-8270C

Sample/Analyte: 1304185-11

DASB227-0507

Phenanthrene

Anthracene

1304185-11 DASB227-0507

Pyrene

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is considered estimated.

Analysis: USEPA-8270C

Sample/Analyte: 1304185-11 DASB227-0507

1304185-11 DASB227-0507 Benzo(a)anthracene 1304185-11 DASB227-0507 Benzo(b)fluoranthene

1304185-11 DASB227-0507 Chrysene 1304185-11 DASB227-0507 Fluoranthene

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 1303302-MS1 Benzo(b)fluoranthene

1303302-MS1Benzo(k)fluoranthene1303302-MS1Dibenz(a,h)anthracene1303302-MS1Indeno(1,2,3-cd)pyrene1303302-MSD1Dibenz(a,h)anthracene

1304185-01 DASS201-0002 Acenaphthene

 1304185-01
 DASS201-0002
 Benzo(b)fluoranthene

 1304185-01
 DASS201-0002
 Benzo(k)fluoranthene

 1304185-01
 DASS201-0002
 Dibenz(a,h)anthracene

1304185-01 DASS201-0002 Fluorene

 1304185-01
 DASS201-0002
 Nitrobenzene-d5

 1304185-02
 DASS202-0002
 2-Methylnaphthalene

 1304185-02
 DASS202-0002
 Benzo(b)fluoranthene

 1304185-02
 DASS202-0002
 Benzo(k)fluoranthene

 1304185-02
 DASS202-0002
 Naphthalene

 1304185-03
 DASS203-0002
 Acenaphthylene

 1304185-03
 DASS203-0002
 Anthracene

 1304185-03
 DASS203-0002
 Benzo(b)fluoranthene

 1304185-03
 DASS203-0002
 Benzo(k)fluoranthene

 1304185-03
 DASS203-0002
 Dibenz(a,h)anthracene

1304185-04 DASS204-0002 Acenaphthene 1304185-04 DASS204-0002 Anthracene

 1304185-04
 DASS204-0002
 Benzo(b)fluoranthene

 1304185-04
 DASS204-0002
 Benzo(k)fluoranthene

 1304185-04
 DASS204-0002
 Dibenz(a,h)anthracene

1304185-04 DASS204-0002 Fluorene

 1304185-05
 DASS205-0002
 2-Methylnaphthalene

 1304185-05
 DASS205-0002
 Benzo(b)fluoranthene

 1304185-05
 DASS205-0002
 Benzo(k)fluoranthene



Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 13041	185-05 DASS205	i-0002	Dibenz(a,h)anthracene
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1304185-05	DASS205-0002	Fluorene
1304185-05	DASS205-0002	Naphthalene
1304185-06	DASS206-0002	Acenaphthene
1304185-06 ⁻	DASS206-0002	Anthracene
1304185-06	DASS206-0002	Benzo(b)fluoranthene
1304185-06	DASS206-0002	Benzo(k)fluoranthene
1304185-06	DASS206-0002	Fluorene
1304185-06	DASS206-0002	Naphthalene
1304185-06	DASS206-0002	Nitrobenzene-d5
1304185-07	DASS207-0002	2-Methylnaphthalene
1304185-07	DASS207-0002	Benzo(b)fluoranthene
1304185-07	DASS207-0002	Benzo(k)fluoranthene
1304185-07	DASS207-0002	Dibenz(a,h)anthracene
1304185-07	DASS207-0002	Naphthalene
1304185-08	DASB224-0507	2-Methylnaphthalene
1304185-08	DASB224-0507	Benzo(b)fluoranthene
1304185-08	DASB224-0507	Benzo(k)fluoranthene
1304185-08	DASB224-0507	Dibenz(a,h)anthracene
1304185-08	DASB224-0507	Indeno(1,2,3-cd)pyrene
1304185-08	DASB224-0507	Naphthalene
1304185-09	DASB225-0507	2-Methylnaphthalene
1304185-09	DASB225-0507	Benzo(b)fluoranthene
1304185-09	DASB225-0507	Benzo(k)fluoranthene
1304185-10	DASB226-0507	2-Methylnaphthalene
1304185-10	DASB226-0507	Benzo(b)fluoranthene
1304185-10	DASB226-0507	Benzo(k)fluoranthene
1304185-10	DASB226-0507	Dibenz(a,h)anthracene
1304185-10	DASB226-0507	Naphthalene
1304185-10	DASB226-0507	Nitrobenzene-d5
1304185-11	DASB227-0507	Benzo(b)fluoranthene
1304185-11	DASB227-0507	Benzo(k)fluoranthene
1304185-11	DASB227-0507	Dibenz(a,h)anthracene
1304185-12	DASB-FD-03	2-Methylnaphthalene
1304185-12	DASB-FD-03	Benzo(b)fluoranthene

Qualification: The RL for this analysis has been elevated due to sample matrix interference.

DASB-FD-03

DASB-FD-03

Analysis: USEPA-8270C

1304185-12

1304185-12

Sample: 1304185-01 DASS201-0002

1304185-03 DASS203-0002 1304185-04 DASS204-0002 1304185-06 DASS206-0002 1304185-10 DASB226-0507 Benzo(k)fluoranthene

Naphthalene



Semivolatile Organic Compounds by EPA Method 8270C (Continued)



Total Metals by EPA 6000/7000 Series Methods

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was greater than or equal to 4 times the spiked amount; matrix QC results are

not available.

Analysis: USEPA-6020A

Sample/Analyte: 1304185-11

DASB227-0507

Lead

4/02R

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Individual sample results relate only to the sample tested.

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	SAMPLE RECEIVING	FLOG-IN			
TRIMATRI	X JETRO TE	ck	New / Ade To	130413	75
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5	□ 8ox	Thermometer User	Digital Thermome		ddrional Cooler maion Form
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Paperwork Received		Check Sample P		<u> </u>	
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Check COC for Accuracy Yes No D Analysis Requested? Sample ID matches COC? Sample Date and Time metal	283 hes COC?	Check for Short I Bacterlological Air Begs	Semples chemics If "No", added ora Received pre-pre- D McOH Hold-Time Prep/A	Ty preserved correctly? inge tag? served VOC soils? RispSO nallyses AFTER HOURS COPIES OF COC TO JUNDE RECEIVED	CINLY: LAB AREA(S)
Check COC for Accuracy (es No D Analysis Requested? Sample ID matches COC? Sample ID matches COC? Container type completed on	283 hes COC? COC?	Check for Short I Bacteriological Air Begs EnCones / Me Formaticinyde/ Groen-tagged	Semples chemics If "No", added ora Received pre-pre- C McOH Hold-Time Prep/A thanci Pre-Preserved Aktehyde containers	Ty preserved correctly? inge tag? served VOC soils? RispSO nallyses AFTER MOURS COPIES OF COC TO NONE RECEIVED RECEIVED. COCS 1	CRLY: LAB AREA(S)
Check COC for Accuracy Yes No Analysis Requested? Sample 10 metches COC? Sample 10 metches COC? Sample Date and Time mates Container type completed on	hes COC? COC? sre received?	Check for Short I Bacteriological Air Begs EnCores / Me Formaticinyde/ Groen-tagged o Yellow-White-ta	Semples chemics If "No", added ora Received pre-pre- D McOH Hold-Time Prep/A	Ty preserved correctly? inge tag? served VOC soils? RispSO nallyses AFTER MOURS COPIES OF COC TO NONE RECEIVED RECEIVED. COCS 1	CRLY: LAB AREA(S)
Check COC for Accuracy Yes No Analysis Requested? Sample ID matches COC? Sample Date and Time metal Container type completed on All container types indicated a	hes COC? COC? sre received?	Check for Short I Bacteriological Air Begs EnCones / Me Formaticinyde/ Groen-tagged	Semples chemics If "No", added ora Received pre-pre- C McOH Hold-Time Prep/A thanci Pre-Preserved Aktehyde containers	Ty preserved correctly? inge tag? served VOC soils? RispSO nallyses AFTER MOURS COPIES OF COC TO NONE RECEIVED RECEIVED. COCS 1	CRLY: LAB AREA(S)
Check COC for Accuracy Yes No Analysis Requested? Sample ID matches COC? Sample ID matches COC? Sample Date and Time matches Container type completed on All container types indicated a Sample Condition Summary Yes No. Broken containers	PS COC? COC? ine raceived? Itds?	Check for Short I Bacteriological Air Begs EnCores / Me Formaticinyde/ Groen-tagged o Yellow-White-ta	Semples chemics If "No", added ora Received pre-pre- C McOH Hold-Time Prep/A thanci Pre-Preserved Aktehyde containers	Ty preserved correctly? inge tag? served VOC soils? RispSO nallyses AFTER MOURS COPIES OF COC TO NONE RECEIVED RECEIVED. COCS 1	CRLY: LAB AREA(S)
Check COC for Accuracy Yes No Analysis Requested? Sample ID marches COC? Sample Date and Time metal Container type completed on All container types indicated a Sample Condition Summary Yes No. Broken containers Missing or incompl	hes COC? COC? sre received? //ds?	Check for Short I Bacteriological Air Begs EnCores / Me Formaticinyde/ Groen-tagged o Yellow-White-ta	Semples chemics If "No", added ora Received pre-pre- C McOH Hold-Time Prep/A thanci Pre-Preserved Aktehyde containers	Ty preserved correctly? inge tag? served VOC soils? RispSO nallyses AFTER MOURS COPIES OF COC TO NONE RECEIVED RECEIVED. COCS 1	CRLY: LAB AREA(S)
Check COC for Accuracy Yes No Analysis Requested? Sample ID marches COC? Sample ID marches COC? Sample Date and Time metal Container type completed on All container types indicated a Sample Condition Summary Was No. Broken containers Missing or incompleted intermetation Missing or incompleted intermetation Missing or incompleted intermetation Illegible Intermetation	Ales COC? COC? Are received? Vids? lete labels? n on labels?	Check for Short I Bacteriological Air Begs EnCores / Me Formationyde/ Groen-tegged Yellow/White-tr	Received pre-pre Received pre-pre Received pre-pre Received pre-pre Received pre-pre Received pre-pre Received pre-pre Received pre-pre- Received pre-pre- Received pre-pre- Received pre-pre-pre- Received pre-pre-pre-pre- Received pre-pre-pre-pre-pre-pre- Received pre-pre-pre-pre-pre-pre-pre-pre-pre-pre-	Ay preserved correctly? inge tag? Interpreted VOC soils? Interpreted VOC soils? Interpreted VOC soils? AFTER HOURS COPIES OF COC TO. INDURE RECEIVED OF RECEIVED. COCS 1	CRLY: LAB AREA(S)
Check COC for Accuracy Yes No Analysis Requested? Sample Io merches COC? Sample Date and Time mater Container type completed on All container types indicated a Sample Condition Summary VA Yes No Broken containers Missing or incompl Illegible information Low votume receive	Ales COC? COC? Are received? Vids? lete labels? n on labels?	Check for Short I Bacteriological Air Begs EnCores / Me Formaticinyde/ Groen-tagged o Yellow-White-ta	Received pre-pres If 'Nor', added ora Received pre-pres MeOH Hold-Time Prep/Au thanol Pre-Preserved Abbehyde promainare paged 1L ambers (SV Preserved) Trip Bl	Ty preserved correctly? inge tag? Preserved VOC soils? Preserved VOC soils? Preserved VOC soils? AFTER HOURS COPIES OF COC TO: DO NIDNE RECEIVED RECEIVED. COCS 1 TO NIDNE RECEIVED.	CINLY: LAB AREA(S)
Check COC for Accuracy Yes No Analysis Requested? Sample Io merches COC? Sample Date and Time mater Container type completed on All contentor types indicated a Sample Condition Summary VA Yes No Broken containers Missing or incompl Illegible information Low volume receive Low volume receive Low volume receive VOC viels / TOX co	hes COC? COC? sire received? (ids? late labels? n on labels? ed?	Check for Short I Bacteriological Air Begs EnCones / Me Framadelryde/ Grosn-tegged Yelbw/White-tr	Received pre-pres If 'Nor', added ora Received pre-pres MeOH Hold-Time Prep/Au thanol Pre-Preserved Abbehyde promainare paged 1L ambers (SV Preserved) Trip Bl	Ay preserved correctly? inge tag? served VOC soils? Na_SO_ nalyses AFTER HOURS COPIES OF COC TO. NONE RECEIVED. COCS TO. PRECEIVED. COCS TO. ank not listed on COC Delivered (Date/Time) ≤1	CINLY: LAB AREA(S) TO LAB(S)



April 16, 2013

TETRA TECH NUS - Pittsburgh

Attn: Mr. Joe Logan

661 Anderson Drive, Foster Plaza 7

Pittsburgh, PA 15220

Project: USCG Atwater Facility

Dear Mr. Joe Logan,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1304208	04/12/2013	Laboratory Services
1304212	04/13/2013	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/12-056-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#83658); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood Project Chemist



Client:

TETRA TECH NUS - Pittsburgh

1304208

Client

Project:

USCG Atwater Facility

Work Order: Description: Sampled:

Laboratory Services

Lab Sample ID:

Client Sample ID: DASB228-0305 1304208-01

Sampled By:

04/11/13 15:10

Matrix:

Soil

04/12/13 17:30

Unit:

mg/kg dry

Received: Prepared:

04/15/13 By: ALK

Dilution Factor:

By: ASC

QC Batch:

1303365

Analyzed:

04/15/13

Percent Solids:

86

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Namakan	A markets	Analytical Result		
CAS Number	Analyte	Kesuit	RL	MDL
83-32 -9	Acenaphthene	0.019U	0.019	0.0054
208-96-8	Acenaphthylene	0.019U	0.019	0.0048
120-12-7	Anthracene	0.019U	0.019	0.0046
56-55-3	Benzo(a)anthracene	0.00363	0.019	0.0032
*50-32-8	Benzo(a)pyrene	0.019U	0.019	0.0027
*205 -99 -2	Benzo(b)fluoranthene	0.0032J	0.019	0.0022
*207-08-9	Benzo(k)fluoranthene	0.019U	0.019	0.0023
191-24-2	Benzo(g,h,i)perylene	0.0036J	0.019	0.0022
*218-01- 9	Chrysene	0.00523	0.019	0.0045
53-70-3	Dibenz(a,h)anthracene	0.019U	0.019	0.0022
206 -44- 0	Fluoranthene	0.00683	0.019	0.0052
86-73-7	, Fluorene	0.019U	0.019	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	0.019U	0.019	0.0031
91-57-6	2-Methylnaphthalene	0.019U	0.019	0.0053
*91-20-3	Naphthalene	0.019U	0.019	0.0065
85-01-8	Phenanthrene	0.00523	0.019	0.0047
129-00-0	Рутепе	0.0080J	0.019	0.0050

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>70</i>	<i>35-100</i>
2-Fluorobiphenyl	· 72	<i>45-105</i>
o-Terphenvl	74	<i>30-125</i>

*See Statement of Data Qualifications

Page 2 of 58



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB228-0305

Lab Sample ID:

1304208-01

Matrix: Percent Solids: Soil

86

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:10

Sampled By:

Gient

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	5.1	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:15 MSF	1 1303384
Lead	6.9	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:15 MSN	1 1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB228-0305 1304208-01

Matrix:

Soil

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:10

Sampled By: Received:

Client

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit [.]	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	86	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB229-0305

Matrix:

1304208-02

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303365

Percent Solids: 90

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:15

Sampled By:

Client

Received: Prepared: 04/12/13 17:30

04/15/13 By: ALK

By: ASC

Analyzed:

04/15/13

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32- 9	Acenaphthene	0.018U	0.018	0.0051
208-96-8	Acenaphthylene	0.018U	0.018	0.0046
120-12-7	Anthracene	0.018U	0.018	0.0044
56-55-3	Benzo(a)anthracene	0.0038J	0.018	0.0030
50-32-8	Benzo(a)pyrene	0.00343	0.018	0.0025
*205- 99 -2	Benzo(b)fluoranthene	0.0038J	0.018	0.0021
*207-08-9	Benzo(k)fluoranthene	0.018U	0.018	0.0022
191-24-2	Benzo(g,h,i)perylene	0.00423	0.018	0.0021
218-01-9	Chrysene	0.018U	0.018	0.0043
53-70-3	Dibenz(a,h)anthracene	0.018U	0.018	0.0021
206-44-0	Fluoranthene	0.00613	0.018	0.0050
86-73-7	Fluorene	0.018U	0.018	0.0045
193-39-5	Indeno(1,2,3-cd)pyrene	0.018U	0.018	0.0030
91-57-6	2-Methylnaphthalene	0.018U	0.018	0.0051
91-20-3	Naphthalene	0.018U	0.018	0.0062
85-01-8	Phenanthrene	0.0053J	0.018	0.0045
129-00-0	Pyrene	0.00803	0.018	0.0048

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>76</i>	<i>35-100</i>
2-Fluorobiphenyl	· 80	<i>45-105</i>
o-Terphenvi	77	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB229-0305 1304208-02

Matrix:

Soil

Percent Solids:

90

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:15

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	6.1	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:16 N	1SM 1303384
Lead	6.5	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:16	ISM 1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB229-0305 1304208-02

Matrix:

Soil

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:15

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	90	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB230-0305 1304208-03

Lab Sample ID: Matrix:

Soil

Unit:

Dilution Factor:

mg/kg dry

QC Batch:

1303365

Percent Solids:

86

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:20

Sampled By:

Client

Received: Prepared: 04/12/13 17:30 04/15/13

Analyzed:

04/15/13

By: ASC

By: ALK

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number		· Analytical Result		
CAS Number	Analyte	Kesuit	RL	MDL_
83-32-9	Acenaphthene	0.020U	0.020	0.0054
208-96-8	Acenaphthylene	0.020U	0.020	0.0049
120-12-7	Anthracene	0.020U	0.020	0.0047
*56-55-3	Benzo(a)anthracene	0.020บ	0.020	0.0032
50-32-8	Benzo(a)pyrene	0.020U	0.020	0.0027
*205 -99 -2	Benzo(b)fluoranthene	0.020U	0.020	0.0022
*207-08-9	Benzo(k)fluoranthene	0.020U	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.00283	0.020	0.0022
*218-01-9	Chrysene	0.020U	0.020	0.0045
53-70-3	Dibenz(a,h)anthracene	0.020U	0.020	0.0022
206-44-0	Fluoranthene	0.020บ	0.020	0.0052
86-73-7	Fluorene	0.020U	0.020	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	0.020U	0.020	0.0031
91-57 - 6	2-Methylnaphthalene	0.020U	0.020	0.0053
91-20-3	Naphthalene	0.020U	0.020	0.0065
85-01-8	Phenanthrene	0.020U	0.020	0.0048
12 9- 00-0	Pyrene	0.020U	0.020	0.0050

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>72</i>	<i>35-100</i>
2-Fluorobiphenyl	74	<i>45-105</i>
o-Terphenyl	<i>73</i>	<i>30-125</i>

*See Statement of Data Qualifications

Page 8 of 58



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB230-0305

Lab Sample ID:

1304208-03

Matrix: Percent Solids: Soil 86

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:20

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC y Batch
Arsenic	4.3	0.094	0.015	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:17 MS	M 1303384
Lead	6.9	0.094	0.0062	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:17 MS	M 1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB230-0305 1304208-03

Matrix:

Soil

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:20

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed E	QC Batch
Percent Solids	86	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 B	AR 1303418



Client:

TETRA TECH NUS - Pittsburgh

Work Order:

1304208

Project: Client Sample ID: DASB231-0305

USCG Atwater Facility

Description: Sampled:

Laboratory Services

Lab Sample ID:

1304208-04

Sampled By:

04/11/13 15:25

Matrix:

Client

Unit:

Soil

Received: Prepared: 04/12/13 17:30 By: ALK

Dilution Factor:

mg/kg dry

04/15/13

Analyzed:

By: ASC 04/15/13

QC Batch:

1303365

Analytical Batch: 3D15025

Percent Solids: 86

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL .	MDL
CAD ITEMIDES	Allarya			MDL
83-32- 9	Acenaphthene	0.019U	0.019	0.0054
208-96-8	Acenaphthylene	0.019U	0.019	0.0049
120-12-7	Anthracene	0.019U	0.019	0.0047
56-55-3	Benzo(a)anthracene	0.019U	0.019	0.0032
50-32-8	Benzo(a)pyrene	0.019U	0.019	0.0027
*205-99-2	Benzo(b)fluoranthene	0.00233	0.019	0.0022
*207-08-9	Benzo(k)fluoranthene	0.019U	0.019	0.0023
191- 24 -2	Benzo(g,h,i)perylene	0.00343	0.019	0.0022
218-01- 9	Chrysene	0.0045J	0.019	0.0045
53-70-3	Dibenz(a,h)anthracene	0.019U	0.019	0.0022
20 6-44- 0	Fluoranthene	0.019U	0.019	0.0052
86-73-7	Fluorene	0.019U	0.019	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	0.019U	0.019	0.0031
91-57-6	2-Methylnaphthalene	0.019U	0.019	0.0053
91-20-3	Naphthaiene	0.019U	0.019	0.0065
85-01-8	Phenanthrene	0.019U	0.019	0.0048
129-00-0	Pyrene	0.00573	0.019	0.0050
•	•			

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>73</i>	<i>35-100</i>
2-Fluorobiphenyl	. <i>1</i> 7	<i>45-105</i>
o-Temhenvi	<i>7</i> 3	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB231-0305

Lab Sample ID:

Percent Solids:

1304208-04

Matrix:

Soil 86

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:25

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	5.1	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:18 MSM	1303384
Lead	7.5	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:18 MSM	1303384



Client:

TETRA TÈCH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB231-0305 1304208-04

Matrix:

Soil

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 15:25

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method		etch
Percent Solids	86	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303	3418



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASBFD-04 1304208-05

Matrix:

Soil

Unit:

Dilution Factor:

mg/kg dry

QC Batch:

1303365

Percent Solids:

Work Order:

1304208

Description:

Laboratory Services

Sampled: Sampled By: 04/11/13 00:00 Client

Received:

04/12/13 17:30

Prepared:

04/15/13 By: ALK

Analyzed:

04/15/13

By: ASC

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32 -9	Acenaphthene	0.019U	0.019	0.0053
208-96-8	Acenaphthylene	0.019U	0.019	0.0047
120-12-7	Anthracene	0.019U	0.019	0.0046
*56-55-3	Benzo(a)anthracene	0.019U	0.019	0.0031
50-32-8	Benzo(a)pyrene	0.019U	0.019	0.0026
*205- 99 -2	Benzo(b)fluoranthene	0.019U	0.019	0.0022
*207-08-9	Benzo(k)fluoranthene	0.019U	0.019	0.0022
191-24-2	Benzo(g,h,i)perylene	0.00443	0.019	0.0021
*218-01-9	Chrysene	0.019U	0.019	0.0044
53-70-3	Dibenz(a,h)anthracene	0.019U	0.019	0.0022
206-44-0	Fluoranthene	0.019U	0.019	0.0051
86-73-7	Fluorene	0.019U	0.019	0.0046
193-39-5	Indeno(1,2,3-cd)pyrene	0.019U	0.019	0.0030
91-57-6	2-Methylnaphthalene	0.019U	0.019	0.0052
91-20-3	Naphthaiene	0.019U	0.019	0.0064
85-01-8	Phenanthrene	0.019U	0.019	0.0046
129-00-0	Pyrene	0.019U	0.019	0.0049

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>75</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>76</i>	<i>45-105</i>
o-Temhenvl	<i>78</i>	<i>30-125</i>

*See Statement of Data Qualifications

Page 14 of 58



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASBFD-04 1304208-05

Matrix:

Soil

Percent Solids: 88 Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	5.6	0.094	0.015	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:19 MSM	1303384
Lead	7.1	0.094	0.0062	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:19 MSM	1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASBFD-04 1304208-05

Matrix:

Soil

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By: Received:

Client

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	88	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASBFD-05 Lab Sample ID:

1304208-06

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

1

QC Batch:

1303365

87

Percent Solids:

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By:

Client

Received:

04/12/13 17:30

Prepared:

04/15/13 By: ALK

Analyzed:

04/15/13

By: ASC

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
				
83-32-9	Acenaphthene	0.019U	0.019	0.0053
208-96-8	Acenaphthylene	0.019U	0.019	0.0048
120-12-7	Anthracene	0.019U	0.019	0.0046
56-55-3	Benzo(a)anthracene	0.00403	0.019	0.0032
50-32-8	Benzo(a)pyrene	0.0028J	0.019	0.0027
*205-99-2	Benzo(b)fluoranthene	0.0024J	0.019	0.0022
*207-08-9	Benzo(k)fluoranthene	0.00283	0.019	0.0022
191-24-2	Benzo(g,h,i)perylene	0.00443	0.019	0.0022
218-01-9	Chrysene	0.00523	0.019	0.0045
53-70-3	Dibenz(a,h)anthracene	0.019U	0.019	0.0022
206-44-0	Fluoranthene	0.00603	0.019	0.0052
86-73-7	Fluorene	0.019U	0.019	0.0046
*193-39-5	Indeno(1,2,3-cd)pyrene	0.019U	0.019	0.0031
91-57-6	2-Methylnaphthalene	0.019U	0.019	0.0053
91-20-3	Naphthalene	0.019U	0.019	0.0065
85-01-8	Phenanthrene	0.019U	0.019	0.0047
129-00-0	Pyrene	0.0084J	0.019	0.0050

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>71</i>	<i>35-100</i>
2-Fluorobiphenyl	75	<i>45-105</i>
o-Terphenvi	<i>73</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASBFD-05 1304208-06

Matrix:

Percent Solids:

Soil 87

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	5.0	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:20 MSM	1303384
Lead	9.2	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:20 MSM	1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASBFD-05 1304208-06

Matrix:

Soil

Work Order:

1304208

Description:

Laboratory Services

Sampled:

04/11/13 00:00

Sampled By:

Client

Received:

04/12/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	87	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client:

TETRA TECH NUS - Pittsburgh

Work Order: Description:

Sampled:

Received:

Prepared:

Analyzed:

Sampled By:

1304212

J.G.

Laboratory Services

By: ALK

By: DWJ

04/12/13 12:10

04/13/13 08:45

04/15/13

04/16/13

Project:

USCG Atwater Facility

Client Sample ID: DASS208-0002

1304212-01

Matrix:

Soil

87

Unit:

mg/kg dry

Dilution Factor:

Lab Sample ID:

QC Batch:

1303365

Percent Solids:

5

Analytical Batch: 3D16006

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL.	MDL
*83-32-9		0.0221		
	Acenaphthene	0.0333	0.096	0.027
208-96-8	Acenaphthylene	0.096U	0.096	0.024
120-12-7	Anthracene	0.0893	0.096	0.023
56-55-3	Benzo(a)anthracene	0.32	0.096	0.016
50-32-8	Benzo(a)pyrene	0.27	0.096	0.013
*205-99-2	Benzo(b)fluoranthene	0.32	0.096	0.011
*207-08-9	Benzo(k)fluoranthene	0.14	0.096	0.011
191-24-2	Benzo(g,h,i)perylene	0.16	0.096	0.011
218-01-9	Chrysene	0.29	0.096	0.022
53-70-3	Dibenz(a,h)anthracene	0.031J	0.096	0.011
206-44-0	Fluoranthene	0.43	0.096	0.026
*86-73-7	Fluorene	0.0333	0.096	0.023
193-3 9- 5	Indeno(1,2,3-cd)pyrene	0.12	0.096	0.015
91-57-6	2-Methylnaphthalene	0.096U	0.096	0.026
91-20-3	Naphthalene	0.096U	0.096	0.032
85-01-8	Phenanthrene	0.32	0.096	0.024
129-00-0	Pyrene	0.61	0.096	0.025

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>52</i>	<i>35-100</i>
2-Fluorobiphenyl	· 66	<i>45-105</i>
o-Tembenyl	60	<i>30-125</i>



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS208-0002

Lab Sample ID:

1304212-01

Matrix: Percent Solids: Soil 87

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:10

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By E	QC Batch
Arsenic	7.7	0.092	0.015	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:20 MSM 13	303384
Lead	340	4.6	0.30	mg/kg dry wt.	50	USEPA-6020A	04/16/13 10:38 MSM 13	03384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS208-0002

Lab Sample ID: Matrix:

1304212-01 Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:10

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC y Batch
Percent Solids	87	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BA	R 1303418



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASS209-0002

Lab Sample ID:

1304212-02

Matrix:

Soil

Unit: mg/kg dry 2

Dilution Factor: QC Batch:

1303365

Percent Solids:

81

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:15

Sampled By:

J.G.

04/13/13 08:45 By: ALK

Received: Prepared: Analyzed:

04/15/13

04/16/13

By: DWJ

Analytical Batch: 3D16006

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.079	0.041	0.011
208-96-8	Acenaphthylene	0.0173	0.041	0.010
120-12-7	Anthracene	0.18	0.041	0.0099
56-55-3	Benzo(a)anthracene	0.63	0.041	0.0068
50-32-8	Benzo(a)pyrene	0.57	0.041	0.0057
*205 -99 -2	Benzo(b)fluoranthene	0.65	0.041	0.0047
*207-08- 9	Benzo(k)fluoranthene	0.38	0.041	0.0048
191-24-2	Benzo(g,h,i)perylene	0.34	0.041	0.0047
218-01-9	Chrysene	0.65	0.041	0.0096
53-70-3	Dibenz(a,h)anthracene	0.12	0.041	0.0047
206-44-0	Fluoranthene	0.99	0.041	0.011
86-73-7	Fluorene	0.068	0.041	0.0099
193-39-5	Indeno(1,2,3-cd)pyrene	0.31	0.041	0.0066
*91-57-6	2-Methylnaphthalene	0.034J	0.041	0.011
91-20-3	Naphthalene	0.030J	0.041	0.014
85-01-8	Phenanthrene	0.84	0.041	0.010
129-00-0	Pyrene	1.1	0.041	0.011

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	67	<i>35-100</i>
2-Fluorobiphenyl	69	<i>45-105</i>
o-Temhenvi	<i>38</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS209-0002

DACC200 0002

Lab Sample ID:

1304212-02

Matrix:

Soil 81

Percent Solids:

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:15

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch	_
Arsenic	. 11	0.50	0.082	mg/kg dry wt.	5	USEPA-6020A	04/16/13 10:40 MSM 1303384	4
Lead	510	10	0.66	mg/kg dry wt.	100	USEPA-6020A	04/16/13 10:39 MSM 1303384	4



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS209-0002

Lab Sample ID: Matrix:

1304212-02 Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:15

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	81	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client:

TETRA TECH NUS - Pittsburgh

USCG Atwater Facility

Project:

Client Sample ID: DASS210-0002

Lab Sample ID:

1304212-03

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303365

Percent Solids:

88

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:20

Sampled By:

J.G.

Received:

04/13/13 08:45

Prepared: Analyzed: 04/15/13 By: ALK 04/15/13

By: ASC

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Aushda	Analytical Result	Di	1451
C/G Number	Analyte	Kesuit	RL	MDL
83-32-9	Acenaphthene	0.019U	0.019	0.0052
208-96-8	Acenaphthylene	0.019U	0.019	0.0047
120-12-7	Anthracene	0.019U	0.019	0.0045
56-55-3	Benzo(a)anthracene	0.019U	0.019	0.0031
50-32-8	Benzo(a)pyrene	0.019U	0.019	0.0026
*205-99-2	Benzo(b)fluoranthene	0.019U	0.019	0.0022
*207-08-9	Benzo(k)fluoranthene	0.019U	0.019	0.0022
191-24-2	Benzo(g,h,i)perylene	0.019U	0.019	0.0021
218-01-9	Chrysene	0.019U	0.019	0.0044
53-70-3	Dibenz(a,h)anthracene	0.019U	0.019	0.0022
206-44-0	Fluoranthene	0.019U	0.019	0.0051
86-73-7	Fluorene	0.019U	0.019	0.0046
193-3 9 -5	Indeno(1,2,3-cd)pyrene	0.019U	0.019	0.0030
91-57-6	2-Methylnaphthalene	0.019U	0.019	0.0052
91-20-3	Naphthalene	0.019U	0.019	0.0063
85-01-8	Phenanthrene	0.019U	0.019	0.0046
129-00-0	Pyrene	0.019U	0.019	0.0049

Surrogates:	% Recovery	Control Limits		
Nitrobenzene-d5	<i>70</i>	<i>35-100</i>		
2-Fluorobiphenyl	81	<i>45-105</i>		
o-Tembenyl	<i>77</i>	<i>30-125</i>		

*See Statement of Data Qualifications

Page 26 of 58



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS210-0002

Lab Sample ID: Matrix:

1304212-03

Percent Solids:

Soil 88

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:20

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	2.3	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:24 M	ISM 1303384
Lead	2.7	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:24 M	ISM 1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS210-0002

Lab Sample ID: Matrix:

1304212-03 Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:20

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	88	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR	1303418



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASS211-0002

Lab Sample ID:

1304212-04

Matrix:

Soil

Unit: mg/kg dry

Dilution Factor:

QC Batch:

5 1303365

Percent Solids: 84 Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:25

Sampled By:

J.G.

Received:

04/13/13 08:45

Prepared: Analyzed:

04/15/13

By: ALK

04/16/13

By: DWJ

Analytical Batch: 3D16006

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.099U	0.099	0.028
208- 9 6-8	Acenaphthylene	0.099U	0.099	0.025
120-12-7	Anthracene	0.099U	0.099	0.024
56-55-3	Benzo(a)anthracene	0.0523	0.099	0.016
50-32-8	Benzo(a)pyrene	0.068J	0.099	0.014
*205-99-2	Benzo(b)fluoranthene	0.049J	0.099	0.011
*207-08-9	Benzo(k)fluoranthene	0.039J	0.099	0.012
191-24-2	Benzo(g,h,i)perylene	0.039J	0.099	0.011
218-01-9	Chrysene	0.052J	0.099	0.023
53-70-3	Dibenz(a,h)anthracene	0.099U	0.099	0.011
206 -44- 0	Fluoranthene	0.070J	0.099	0.027
86-73-7	Fluorene	0.099U	0.099	0.024
193-39-5	Indeno(1,2,3-cd)pyrene	0.0393	0.099	0.016
91-57 - 6	2-Methylnaphthalene	0.099U	0.099	0.027
91-20-3	Naphthalene	0.099U	0.099	0.033
85-01-8	Phenanthrene	0.0493	0.099	0.024
129-00-0	Pyrene	0.11	0.099	0.026

Surrogates:	% Recovery	Control Limits	
Nitrobenzene-d5	<i>56</i>	<i>35-100</i>	
2-Fluorobiphenyl	<i>56</i>	<i>45-105</i>	
o-Terphenyl		<i>30-125</i>	



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS211-0002 1304212-04

Matrix:

Soil 84

Percent Solids:

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:25

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL.	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	5.8	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:28 MSM	1303384
Lead	43	1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	04/16/13 10:41, MSM	1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS211-0002

Matrix:

1304212-04 Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:25

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	84	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1	303418



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASS212-0002

Lab Sample ID:

1304212-05

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor: QC Batch:

1303365

Percent Solids:

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:30

Sampled By:

J.G.

Received:

04/13/13 08:45

Prepared:

04/15/13 By: ALK

Analyzed:

04/15/13

By: ASC

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.21	0.021	0.0058
208-96-8	Acenaphthylene	0.013J	0.021	0.0052
120-12-7	Anthracene	0.10	0.021	0.0050
56-55-3	Benzo(a)anthracene	0.36	0.021	0.0034
50-32-8	Benzo(a)pyrene	0.26	0.021	0.0029
*205-99-2	Benzo(b)fluoranthene	0.33	0.021	0.0024
*207-08-9	Benzo(k)fluoranthene	0.17	0.021	0.0024
191-24-2	Benzo(g,h,i)perylene	0.091	0.021	0.0024
218-01-9	Chrysene	0.35	0.021	0.0049
*53-70-3	Dibenz(a,h)anthracene	0.027	0.021	0.0024
206-44-0	Fluoranthene	0.51	0.021	0.0056
86-73-7	Fluorene	0.14	0.021	0.0050
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	0.021	0.0034
91-57-6	2-Methylnaphthalene	0.013J	0.021	0.0057
91-20-3	Naphthalene	0.024	0.021	0.0070
85-01-8	Phenanthrene	0.45	0.021	0.0051
129-00-0	Pyrene	0.70	0.021	0.0054

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>76</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>72</i>	<i>45-105</i>
o-Terphenvl	<i>68</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS212-0002

Lab Sample ID: Matrix:

1304212-05 Soil 80

Percent Solids:

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:30

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	5.4	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:29 MSM	1303384
Lead	220	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/16/13 10:42 MSM	1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS212-0002

Matrix:

1304212-05 Soil

Work Order:

1304212

Description: .

Laboratory Services

Sampled:

04/12/13 12:30

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	80	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB232-0305 Lab Sample ID:

1304212-06

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303365

Percent Solids:

86

Work Order: 1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:40

Sampled By:

J.G.

Received: Prepared:

Analyzed:

04/13/13 08:45 By: ALK

04/15/13

04/15/13

By: ASC

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.019U	0.019	0.0054
208-96-8	Acenaphthylene	0.019U	0.019	0.0049
*120-12-7	Anthracene	0.019U	0.019	0.0047
*56-55-3	Benzo(a)anthracene	0.019U	0.019	0.0032
50-32-8	Benzo(a)pyrene	0.019U	0.019	0.0027
*205- 99- 2	Benzo(b)fluoranthene	0.0024J	0.019	0.0022
*207-08-9	Benzo(k)fluoranthene	0.019U	0.019	0.0023
191-24-2	Benzo(g,h,i)perylene	0.00513	0.019	0.0022
*218-01-9	Chrysene	0.019U	0.019	0.0045
53-70-3	Dibenz(a,h)anthracene	0.019U	0.019	0.0022
206-44-0	Fluoranthene	0.019U	0.019	0.0052
86-73-7	Fluorene	0.019U	0.019	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	0.019U	0.019	0.0031
91-57-6	2-Methylnaphthalene	0.019U	0.019	0.0053
91-20-3	Naphthalene	0.019U	0.019	0.0065
85-01-8	Phenanthrene	0.019U	0.019	0.0047
129-00-0	Pyrene	0.019U	0.019	0.0050

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>71</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>73</i>	<i>45-105</i>
o-Terphenyl	<i>7</i> 1	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB232-0305

Lab Sample ID:

1304212-06

Matrix:

Soil 86

Percent Solids:

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:40

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Arsenic	6.1	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:30 MSM 1303384
Lead	7.0	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:30. MSM 1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB232-0305 1304212-06

Matrix:

Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:40

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL.	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	86	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR	1303418



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASB233-0305

Lab Sample ID:

1304212-07

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303365

Percent Solids:

85

Work Order: 1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:45

Sampled By:

J.G.

Received:

04/13/13 08:45

Prepared: Analyzed: 04/15/13 By: ALK

By: ASC 04/15/13

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32- 9	Acenaphthene	0.020U	0.020	0.0054
208- 9 6-8	Acenaphthylene	0.020U	0.020	0.0049
120-12-7	Anthracene	0.020U	0.020	0.0047
56-55-3	Benzo(a)anthracene	0.011J	0.020	0.0032
50-32-8	Benzo(a)pyrene	0.0113	0.020	0.0027
*205 -99 -2	Benzo(b)fluoranthene	0.00973	0.020	0.0022
*207-08-9	Benzo(k)fluoranthene	0.00773	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.0081J	0.020	0.0022
218-01- 9	Chrysene	0.014J	0.020	0.0046
*53-70-3	Dibenz(a,h)anthracene	0.020U	0.020	0.0022
206 -44- 0	Fluoranthene	0.015J	0.020	0.0053
86-73-7	Fluorene	0.020U	0.020	0.0047
*193-39-5	Indeno(1,2,3-cd)pyrene	0.00413	0.020	0.0031
91-57-6	2-Methylnaphthalene	0.020U	0.020	0.0054
91-20-3	Naphthalene	0.020U	0.020	0.0066
85-01-8	Phenanthrene	0.011J	0.020	0.0048
129-00-0	Pyrene	0.018J	0.020	0.0051

Surrogates:	% Recovery	Control Limit
Nitrobenzene-d5	<i>69</i>	<i>35-100</i>
2-Fluorobiphenyl	69	<i>45-105</i>
o-Terphenyl	<i>67</i>	<i>30-125</i>

*See Statement of Data Qualifications

Page 38 of 58



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB233-0305

Lab Sample ID:

1304212-07

Matrix: Percent Solids: Soil 85

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:45

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Arsenic	5.8	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:31 MSM 1303384
Lead	16	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/16/13 10:45 MSM 1303384



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB233-0305

Matrix:

1304212-07 Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:45

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL.	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC by Batch
Percent Solids	85	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 B	AR 1303418



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASB234-0305

Lab Sample ID:

1304212-08

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303365

Percent Solids:

52

Work Order:

1304212

Description:

Laboratory Services

Sampled:

Analyzed:

04/12/13 12:55

Sampled By:

J.G.

Received:

04/13/13 08:45

Prepared:

04/15/13 By: ALK

04/16/13

By: DWJ

Analytical Batch: 3D16006

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.26J	0.32	0.089
208-96-8	Acenaphthylene	0.16J	0.32	0.080
120-12-7	Anthracene	0.81	0.32	0.077
56-55-3	Benzo(a)anthracene	5.9	0.32	0.053
50-32-8	Benzo(a)pyrene	5.7	0.32	0.044
*205-99-2	Benzo(b)fluoranthene	6.6	0.32	0.037
*207-08-9	Benzo(k)fluoranthene	3.6	0.32	0.038
191-24-2	Benzo(g,h,i)perylene	2.8	0.32	0.036
218-01- 9	Chrysene	5.8	0.32	0.075
*53-70-3	Dibenz(a,h)anthracene	0.66	0.32	0.037
206-44-0	Fluoranthene	5.0	0.32	0.086
86-73-7	Fluorene	0.35	0.32	0.078
193-39-5	Indeno(1,2,3-cd)pyrene	2.7	0.32	0.052
*91-57-6	2-Methylnaphthalene	0.123	0.32	0.088
91-20-3	Naphthalene	0.24J	0.32	0.11
85-01-8	Phenanthrene	2.4	0.32	0.079
129-00-0	Pyrene	9.2	0.32	0.083

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>63</i>	<i>35-100</i>
2-Fluorobiphenyl	66	<i>45-105</i>
o-Terphenyl	<i>61</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project: **USCG Atwater Facility**

Client Sample ID: DASB234-0305

Lab Sample ID:

1304212-08

Matrix:

Soil

Percent Solids: 52 Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:55

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	6.6	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:34 MSM	1303384
Lead	220	5.0	0.33	mg/kg dry wt.	50	USEPA-6020A	04/16/13 10:46 MSM	1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB234-0305

Matrix:

1304212-08

Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 12:55

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	52	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASB235-0305

Lab Sample ID:

1304212-09

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

72

QC Batch:

1303365

Percent Solids:

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:00

Sampled By:

J.G.

Received:

04/13/13 08:45

Prepared:

04/15/13 By: ALK

Analyzed:

04/16/13

By: DWJ

Analytical Batch: 3D16006

Semivolatile Organic Compounds by EPA Method 8270C

0.113	0.23	
	U.23	0.064
0.0923	0.23	0.058
0.46	0.23	0.056
1.5	0.23	0.038
1.3	0.23	0.032
1.8	0.23	0.027
1.0	0.23	0.027
0.87	0.23	0.026
1.4	0.23	0.054
0.42	0.23	0.027
2.7	0.23	0.062
0.12J	0.23	0.056
0.82	0.23	0.037
0.23U	0.23	0.064
0.23U	0.23	0.078
1.7	0.23	0.057
2.5	0.23	0.060
	0.092J 0.46 1.5 1.3 1.8 1.0 0.87 1.4 0.42 2.7 0.12J 0.82 0.23U 0.23U 1.7	0.0923 0.23 0.46 0.23 1.5 0.23 1.3 0.23 1.8 0.23 1.0 0.23 0.87 0.23 1.4 0.23 0.42 0.23 2.7 0.23 0.12J 0.23 0.82 0.23 0.23U 0.23 1.7 0.23

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	74	<i>35-100</i>
2-Fluorobiphenyl	· 68	<i>45-105</i>
o-Terphenyl	<i>93</i>	<i>30-125</i>

*See Statement of Data Qualifications

Page 44 of 58



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB235-0305 1304212-09

Lab Sample ID: Matrix:

Soil 72

Percent Solids:

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:00

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	38	1.0	0.16	mg/kg dry wt.	10	USEPA-6020A	04/16/13 10:48 N	1SM 1303384
Lead	1800	20	1.3	mg/kg dry wt.	200	USEPA-6020A	04/16/13 10:47 N	1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB235-0305 1304212-09

Matrix:

Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:00

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Percent Solids	72	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00	BAR	1303418



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB236-0305 1304212-10

Lab Sample ID: Matrix:

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303365

Percent Solids:

Soil

86

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:10

Sampled By:

J.G.

Received:

04/13/13 08:45

Prepared: Analyzed: 04/15/13

By: ALK

04/15/13

By: ASC

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.015J	0.020	0.0054
*208-96-8	Acenaphthylene	0.020U	0.020	0.0049
120-12-7	Anthracene	0.037	0.020	0.0047
56-55-3	Benzo(a)anthracene	0.11	0.020	0.0032
50-32-8	Benzo(a)pyrene	0.10	0.020	0.0027
*205 -9 9-2	Benzo(b)fluoranthene	0.11	0.020	0.0022
*207-08-9	Benzo(k)fluoranthene	0.081	0.020	0.0023
191-24-2	Benzo(g,h,i)perylene	0.057	0.020	0.0022
218-01-9	Chrysene	0.11	0.020	0.0045
53-70-3	Dibenz(a,h)anthracene	0.0193	0.020	0.0022
206-44-0	Fluoranthene	0.21	0.020	0.0052
86-73-7	Fluorene	0.0113	0.020	0.0047
193-39-5	Indeno(1,2,3-cd)pyrene	0.049	0.020	0.0031
91-57-6	2-Methylnaphthalene	0.020U	0.020	0.0053
*91-20-3	Naphthalene	0.020U	0.020	0.0065
85-01-8	Phenanthrene	0.12	0.020	0.0048
129-00-0	Pyreñe	0.22	0.020	0.0050

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	76	<i>35-100</i>
2-Fluorobiphenyl	81	<i>45-105</i>
o-Terphenyl	<i>80</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB236-0305

Lab Sample ID:

1304212-10

Matrix:

Soil

Percent Solids: 86 Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:10

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Arsenic	4.9	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:36 MSM 1303384
Lead	26	0.50	0.033	mg/kg dry wt.	5	USEPA-6020A	04/16/13 10:49 MSM 1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB236-0305

Matrix:

1304212-10 Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:10

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	86	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR 1303418



Client:

TETRA TECH NUS - Pittsburgh

USCG Atwater Facility

Project:

Client Sample ID: DASB237-0305

Lab Sample ID:

1304212-11

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

QC Batch:

1303365

Percent Solids:

81

Work Order:

1304212

Description:

Laboratory Services

Sampled: Sampled By: 04/12/13 13:05

J.G.

Received:

04/13/13 08:45

Prepared: Analyzed: 04/15/13 By: ALK

04/15/13

By: ASC

Analytical Batch: 3D15025

Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
CAS NUMBER	Allaryce	1/09212	- RL	MUL
83-32 -9	Acenaphthene	0.021U	0.021	0.0057
208- 9 6-8	Acenaphthylene	0.021U	0.021	0.0052
*120-12-7	Anthraœne	0.021U	0.021	0.0050
56-55-3	Benzo(a)anthracene	0.00583	0.021	0.0034
*50-32-8	Benzo(a)pyrene	0.00373	0.021	0.0029
*205 -9 9-2	Benzo(b)fluoranthene	0.0058J	0.021	0.0024
*207-08-9	Benzo(k)fluoranthene	0.0025J	0.021	0.0024
191-24-2	Benzo(g,h,i)perylene	0.00253	0.021	0.0023
218-01-9	Chrysene	0.00493	0.021	0.0048
53-70-3	Dibenz(a,h)anthracene	0.021U	0.021	0.0024
206-44-0	Fluoranthene	0.0099J	0.021	0.0055
86-73-7	Fluorene	0.021U	0.021	0.0050
193-39-5	Indeno(1,2,3-cd)pyrene	0.021U	0.021	0.0033
91-57-6	2-Methylnaphthalene	0.021U	0.021	0.0057
91-20-3	Naphthalene	0.021U	0.021	0.0070
85-01-8	Phenanthrene	0.00743	0.021	0.0051
129-00-0	Pyrene	0.0103	0.021	0.0053

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>68</i>	<i>35-100</i>
2-Fluorobiphenyl		<i>45-105</i>
o-Terphenyl	<i>78</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

I-LC L.TD

Client Sample ID: DASB237-0305

Lab Sample ID:

1304212-11

Matrix: Percent Solids: Soil 81 Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:05

Sampled By:

led By: J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed B	QC y Batch
Arsenic	2.5	0.091	0.015	mg/kg dry wt.	1	USEPA-6020A	04/16/13 10:37 MS	M 1303384
Lead	31	0.46	0.030	mg/kg dry wt.	5	USEPA-6020A	04/16/13 10:49 MS	M 1303384



Client:

TETRA TECH NUS - Pittsburgh

Project:

Matrix:

USCG Atwater Facility

Client Sample ID: DASB237-0305

Lab Sample ID:

1304212-11

Soil

Work Order:

1304212

Description:

Laboratory Services

Sampled:

04/12/13 13:05

Sampled By:

J.G.

Received:

04/13/13 08:45

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	81	0.1	0.1	%	1	USEPA-3550C	04/15/13 20:00 BAR	1303418



STATEMENT OF DATA QUALIFICATIONS

Semivolatile Organic Compounds by EPA Method 8270C

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte:	1304208-01	DASB228-0305	Benzo(a)pyrene
	1304208-01	DASB228-0305	Benzo(b)fluoranthene

Benzo(k)fluoranthene 1304208-01 DASB228-0305 1304208-01 DASB228-0305 Chrysene 1304208-01 DASB228-0305 Naphthalene 1304208-02 DASB229-0305 Benzo(b)fluoranthene 1304208-02 Benzo(k)fluoranthene DASB229-0305 Benzo(a)anthracene 1304208-03 DASB230-0305 1304208-03 DASB230-0305 Benzo(b)fluoranthene 1304208-03 DASB230-0305 Benzo(k)fluoranthene

1304208-03 DASB230-0305 Chrysene

1304208-04 DASB231-0305 Benzo(b)fluoranthene 1304208-04 DASB231-0305 Benzo(k)fluoranthene 1304208-05 DASBFD-04 Benzo(a)anthracene 1304208-05 DASBFD-04 Benzo(b)fluoranthene 1304208-05 DASBFD-04 Benzo(k)fluoranthene

1304208-05 DASBFD-04 Chrysene

Benzo(b)fluoranthene 1304208-06 DASBFD-05 Benzo(k)fluoranthene 1304208-06 DASBFD-05 1304208-06 DASBFD-05 Indeno(1,2,3-cd)pyrene

1304212-01 DASS208-0002 Acenaphthene 1304212-01 DASS208-0002 Benzo(b)fluoranthene

Benzo(k)fluoranthene 1304212-01 DASS208-0002 Fluorene 1304212-01 DASS208-0002

1304212-02 DASS209-0002

2-Methylnaphthalene 1304212-02 Benzo(b)fluoranthene DASS209-0002 1304212-02 DASS209-0002 Benzo(k)fluoranthene 1304212-03 DASS210-0002 Benzo(b)fluoranthene 1304212-03 DASS210-0002 Benzo(k)fluoranthene 1304212-04 DASS211-0002 Benzo(b)fluoranthene Benzo(k)fluoranthene 1304212-04 DASS211-0002 1304212-05 DASS212-0002 Benzo(b)fluoranthene

1304212-05 DASS212-0002 Benzo(k)fluoranthene 1304212-05 DASS212-0002 Dibenz(a,h)anthracene

1304212-06 DASB232-0305 Anthracene DASB232-0305 1304212-06 Benzo(a)anthracene 1304212-06 DASB232-0305 Benzo(b)fluoranthene

Benzo(k)fluoranthene 1304212-06 DASB232-0305

1304212-06 DASB232-0305 Chrysene

Benzo(b)fluoranthene 1304212-07 DASB233-0305 Benzo(k)fluoranthene 1304212-07 DASB233-0305 1304212-07 DASB233-0305 Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene 1304212-07 DASB233-0305

1304212-08 DASB234-0305 2-Methylnaphthalene Benzo(b)fluoranthene 1304212-08 DASB234-0305 Benzo(k)fluoranthene 1304212-08 DASB234-0305 1304212-08 DASB234-0305 Dibenz(a,h)anthracene

DASB235-0305

Page 53 of 58

1304212-09

2-Methylnaphthalene



STATEMENT OF DATA QUALIFICATIONS

Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 1304212-09 DASB235-0305 Benzo(b)fluoranthene 1304212-09 DASB235-0305 Benzo(k)fluoranthene

1304212-09 DASB235-0305 Berizo(k)hidorahinene 1304212-09 DASB235-0305 Dibenz(a,h)anthraœne

1304212-09 DASB235-0305 Fluorene

 1304212-10
 DASB236-0305
 Acenaphthylene

 1304212-10
 DASB236-0305
 Benzo(b)fluoranthene

 1304212-10
 DASB236-0305
 Benzo(k)fluoranthene

 1304212-10
 DASB236-0305
 Naphthalene

 1304212-11
 DASB237-0305
 Anthracene

 1304212-11
 DASB237-0305
 Benzo(a)pyrene

 1304212-11
 DASB237-0305
 Benzo(b)fluoranthene

 1304212-11
 DASB237-0305
 Benzo(k)fluoranthene

Qualification: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-8270C

Sample: 1304212-01 DASS208-0002

1304212-04 DASS211-0002

	This report shall not be reproduced, except in full, without written authorization of TriMatrix La	Control of the state of the sta
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Individual sample results relate only to the sample tested.



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TriMatrix COC 25 Other 227	,	8 0	Complete Samp	le Preservation Verification Form?
C ID Numbers	 	ø o	if No., sadec ore	
	"			served VOC soils?
			□ MeOH	O NasO.
eck COC for Accuracy			Hold-Time Prep/A	
No Analysis Requested?		☐ Becteriological		
Analysis Requested? Sample ID matches COC? Sample Date and Time matches COC? Container type completed on COC?		Air Bags	alamii nas niasas si	AFTER HOURS ONLY: COPIES OF COC TO LAB AREA(S)
Sample Date and Time matches COC?		☐ EnCores / Mp ☐ Formaldehyde	Khanol Pre-Preserved Alicensia	O NONE RECEIVED
Container type completed on COC?	. 1	☐ Green-tagged		RECEIVED, DOCS TO LABIST
All compiner types indicated are received?			agged 1L ambers (SV Pr	<u> </u>
mple Condition Summary		Notes		
A Yes No				· ·
D Broken containers/lids?	•			
Missing or incomplete satels? [Regulate information on labels?				
Low volume received?		O Trip Blank rece	ived O Trip Bi	ank not listed on COC
	E received?	Cooker Received (Da		Delivered (Date/Time) <1 Hour Goal Med
U VOC viels / TOX compiners have heads	pace?			
Extre sample locations / containers not a		4/13/12 0	845 4/13	13 1914 (Yes No

Page 58 of 58

Log in Forms - Receiving Log-in_Checkist



April 23, 2013

TETRA TECH NUS - Pittsburgh Attn: Mr. Joe Logan 661 Anderson Drive, Foster Plaza 7 Pittsburgh, PA 15220

Project: USCG Atwater Facility

Dear Mr. Joe Logan,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work OrderReceivedDescription130431404/18/2013Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/12-056-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); İllinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#83658); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood Project Chemist



Client:

TETRA TECH NUS - Pittsburgh

Work Order:

1304314

Project:

USCG Atwater Facility

Description: Sampled:

Laboratory Services

Lab Sample ID:

Client Sample ID: DASS244-0002 1304314-01

Sampled By:

04/17/13 17:30 J.G.

Matrix: Unit:

Soil

Received: Prepared: 04/18/13 17:30

Dilution Factor:

mg/kg dry 20

04/19/13 By: JTS By: JLB

QC Batch:

1303525

Analyzed:

04/22/13

Analytical Batch: 3D22051

Percent Solids: 88

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MOI
GG Namber	Allery Co.		- KL	MDL
83-32-9	Acenaphthene	0.38U	0.38	0.11
208-96-8	Acenaphthylene	0.38U	0.38	0.095
120-12-7	Anthracene	0.38U	0.38	0.091
56-55-3	Benzo(a)anthracene	0.153	0.38	0.062
*50-32-8	Benzo(a)pyrene	0.143	0.38	0.052
*205-99-2	Benzo(b)fluoranthene	0.173	0.38	0.043
*207-08-9	Benzo(k)fluoranthene	0.113	0.38	0.044
*191-24-2	Benzo(g,h,i)perylene	0.0833	0.38	0.043
218-01-9	Chrysene	0.153	0.38	0.088
53-70-3	Dibenz(a,h)anthracene	0.38U	0.38	0.043
*206-44-0	Fluoranthene	0.263	0.38	0.10
86-73-7	Fluorene	0.38U	0.38	0.091
193-39-5	Indeno(1,2,3-cd)pyrene	0.38U	0.38	0.061
91-57-6	2-Methylnaphthalene	0.38U	0.38	0.10
91-20-3	Naphthalene	0.38U	0.38	0.13
85-01-8	Phenanthrene	0.11J	0.38	0.093
129-00-0	Pyrene	0.223	0.38	0.098



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS244-0002

Lab Sample ID:

1304314-01

Matrix: Percent Solids: Soil 88

Work Order:

1304314

Description:

Laboratory Services

Sampled:

04/17/13 17:30

Sampled By:

J.G.

Received:

04/18/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
*Arsenic	6.3	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/22/13 11:52	KLV	1303582
*Lead	430	10	0.66	mg/kg dry wt.	100	USEPA-6020A	04/22/13 09:41	KLV	1303582



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS244-0002

Lab Sample ID:

1304314-01

Matrix:

Soil

Work Order:

1304314

Description:

Laboratory Services

Sampled:

04/17/13 17:30

Sampled By:

J.G.

Received:

04/18/13 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	88	0.1	0.1	%	1	USEPA-3550C	04/19/13 19:15 BAR 1303589

Grand Panide MI 40512 A 616 075 4500 A Fav 616 042 7463



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS245-0002

Matrix:

1304314-02

Unit:

Soil

Dilution Factor:

mg/kg dry

QC Batch:

10

1303525

Percent Solids: 83 Work Order:

1304314

Description:

Laboratory Services

Sampled:

Received:

04/17/13 15:00

Sampled By:

J.G.

04/18/13 17:30

Prepared:

04/19/13

By: JTS

Analyzed:

04/19/13

By: DWJ

Analytical Batch: 3D22010

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL.	MDL
83-32-9	Acenaphthene	0.0843	0.20	0.056
208-96-8	Acenaphthylene	0.20U	0.20	0.050
*120-12-7	Anthracene	0.203	0.20	0.048
*56-55-3	Benzo(a)anthracene	0.51	0.20	0.033
*50-32-8	Benzo(a)pyrene	0.47	0.20	0.028
*205-99-2	Benzo(b)fluoranthene	0.59	0.20	0.023
*207-08-9	Benzo(k)fluoranthene	0.29	0.20	0.023
*191-24-2	Benzo(g,h,i)perylene	0.14J	0.20	0.023
218-01-9	Chrysene	0.39	0.20	0.047
53-70-3	Dibenz(a,h)anthracene	0.20U	0.20	0.023
*206-44-0	Fluoranthene	1.0	0.20	0.054
86-73-7	Fluorene	0.10J	0.20	0.048
*193-39-5	Indeno(1,2,3-cd)pyrene	0.22	0.20	0.032
91-57-6	2-Methylnaphthalene	0.20U	0.20	0.055
*91-20-3	Naphthalene	0.20U	0.20	0.067
*85-01-8	Phenanthrene	0.83	0.20	0.049
*129-00-0	Pyrene	0.78	0.20	0.052

Surrogates:	% Recovery	Control Limit		
Nitrobenzene-d5	<i>57</i>	<i>35-100</i>		
2-Fluorobiphenyl	64	<i>45-105</i>		
o-Temhenvi	<i>85</i>	<i>30-125</i>		

*See Statement of Data Qualifications

Page 5 of 17



Client:

TETRA TECH NUS - Pittsburgh

Work Order: 1304314

J.G.

Project:

USCG Atwater Facility

Description:

Laboratory Services

Lab Sample ID:

Client Sample ID: DASS245-0002 1304314-02

Sampled: Sampled By: 04/17/13 15:00

Matrix:

Soil

Received:

04/18/13 17:30

Percent Solids: 83

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	9.4	0.20	0.033	mg/kg dry wt.	2	USEPA-6020A	04/22/13 12:49	KLV	1303582
*Lead	620	10	0.66	mg/kg dry wt.	100	USEPA-6020A	04/22/13 09:50	KLV	1303582



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASS245-0002 1304314-02

Matrix:

Soil

Work Order:

1304314

Description:

Laboratory Services

Sampled:

04/17/13 15:00

Sampled By:

J.G.

Received:

04/18/13 17:30

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Percent Solids	83	0.1	0.1	%	1	USEPA-3550C	04/19/13 19:15 BAR	1303589



Client: Project: **TETRA TECH NUS - Pittsburgh**

USCG Atwater Facility

Client Sample ID: DASS246-0002

Lab Sample ID:

1304314-03

Matrix:

Soil

Unit:

mg/kg dry

Dilution Factor:

10

83

QC Batch:

1303525

Percent Solids:

Received: Prepared:

Work Order:

Description:

Sampled By:

Sampled:

04/18/13 17:30

04/17/13 15:10

Laboratory Services

Analyzed:

04/19/13 By: JTS

J.G.

04/19/13

1304314

By: DWJ

Analytical Batch: 3D22010

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL .	MDL
83-32-9	Acenaphthene	0.20U	0.20	0.056
208-96-8	Acenaphthylene	0.20U	0.20	0.050
120-12-7	Anthracene	0.20U	0.20	0.048
56-55-3	Benzo(a)anthracene	0.13J	0.20	0.033
*50-32-8	Benzo(a)pyrene	0.095J	0.20	0.028
*205 -99 -2	Benzo(b)fluoranthene	0.143	0.20	0.023
*207-08-9	Benzo(k)fluoranthene	0.0793	0.20	0.024
191-24-2	Benzo(g,h,i)perylene	0.0463	0.20	0.023
218-01-9	Chrysene	0.0993	0.20	0.047
53-70-3	Dibenz(a,h)anthracene	0.20U	0.20	0.023
206-44-0	Fluoranthene	0.183	0.20	0.054
86-73-7	Fluorene	0.20U	0.20	0.049
193-39-5	Indeno(1,2,3-cd)pyrene	0.133	0.20	0.032
91-57-6	2-Methylnaphthalene	0.20U	0.20	0.055
91-20-3	Naphthalene	0.20U	0.20	0.068
85-01-8	Phenanthrene	0.123	0.20	0.049
129-00-0	Pyrene	0.153	0.20	0.052

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>65</i>	<i>35-100</i>
2-Fluorobiphenyl	· 85	<i>45-105</i>
o-Terphenyl	<i>105</i>	<i>30-125</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS246-0002

Lab Sample ID:

1304314-03

Matrix: Percent Solids:

Soil 83

Work Order:

1304314

Description:

Laboratory Services

Sampled:

04/17/13 15:10

Sampled By:

].G.

Received:

04/18/13 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	5.6	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/22/13 12:23	KLV	1303582
*Lead	52	1.0	0.066	mg/kg dry wt.	10	USEPA-6020A	04/22/13 09:58	KLV	1303582



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASS246-0002

Lab Sample ID:

1304314-03

Matrix:

Soil

Work Order:

1304314

Description:

Laboratory Services

Sampled:

04/17/13 15:10

Sampled By:

J.G.

Received:

04/18/13 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch	_
Percent Solids	83	0.1	0.1	%	1	USEPA-3550C	04/19/13 19:15 BAR 1303589	



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-CF-01 1304314-04

Matrix: Percent Solids: Soil n/a

Work Order:

1304314

Description:

Laboratory Services

Sampled:

04/17/13 07:40

Sampled By:

J.G.

Received:

04/18/13 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	3.3	0.092	0.015	mg/kg dry wt.	1	USEPA-6020A	04/22/13 12:36	KLV	1303582
Lead	3.4	0.092	0.0061	mg/kg dry wt.	1	USEPA-602QA	04/22/13 09:28	KLV	1303582



Gient:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-CF-02 1304314-05

Matrix:

Soil

Percent Solids: n/a Work Order:

1304314

Description:

Laboratory Services

Sampled:

04/17/13 15:20

Sampled By:

J.G.

Received:

04/18/13 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed By	QC Batch
Arsenic	3.6	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/22/13 12:38 KLV	1303582
Lead	3.6	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/22/13 09:31 KLV	1303582



Semivolatile Organic Compounds by EPA Method 8270C

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was less than 4 times the spiked amount; the non-spiked sample result is

considered estimated.

Analysis: USEPA-8270C

Sample/Analyte: 1304314-01 DASS244-0002 Fluoranthene

 1304314-02
 DASS245-0002
 Benzo(a)anthracene

 1304314-02
 DASS245-0002
 Benzo(b)fluoranthene

1304314-02 DASS245-0002 Fluoranthene

1304314-02 DASS245-0002 Indeno(1,2,3-cd)pyrene

1304314-02 DASS245-0002 Phenanthrene

1304314-02 DASS245-0002 Pyrene

Qualification: The RPD between the MS and MSD results exceeded the control limit. The non-spiked sample

concentration for the same analyte was less than 4 times the spiked amount; the non-spiked

sample result is considered estimated.

Analysis: USEPA-8270C

Sample/Analyte: 1304314-02 DASS245-0002 Benzo(a)anthracene

 1304314-02
 DASS245-0002
 Benzo(b)fluoranthene

 1304314-02
 DASS245-0002
 Benzo(g,h,i)perylene

1304314-02 DASS245-0002 Fluoranthene

1304314-02 DASS245-0002 Indeno(1,2,3-cd)pyrene

1304314-02 DASS245-0002 Phenanthrene 1304314-02 DASS245-0002 Pyrene

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is considered estimated.

Analysis: USEPA-8270C

Sample/Analyte: 1304314-02 DASS245-0002 Anthracene

 1304314-02
 DASS245-0002
 Benzo(a)pyrene

 1304314-03
 DASS246-0002
 Benzo(a)pyrene

 1304314-03
 DASS246-0002
 Benzo(b)fluoranthene

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 1303525-BS1 Naphthalene

1303525-MS1 Benzo(b)fluoranthene
1303525-MS1 Indeno(1,2,3-cd)pyrene

1303525-MS1
1303525-MS2
1303525-MS2
Naphthalene
1303525-MSD1
Benzo(b)fluoranthene
1303525-MSD2
Benzo(b)fluoranthene
1303525-MSD2
Dibenz(a,h)anthracene
1303525-MSD2
Indeno(1,2,3-cd)pyrene
1303525-MSD2
Nitrobenzene-d5

1304314-01 DASS244-0002 Benzo(a)pyrene
1304314-01 DASS244-0002 Benzo(b)fluoranthene

Page 13 of 17



Semivolatile Organic Compounds by EPA Method 8270C (Continued)

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 1304314-01 DASS244-0002 Benzo(g,h,i)perylene

 1304314-01
 DASS244-0002
 Benzo(k)fluoranthene

 1304314-02
 DASS245-0002
 Benzo(b)fluoranthene

 1304314-02
 DASS245-0002
 Benzo(k)fluoranthene

 1304314-02
 DASS245-0002
 Indeno(1,2,3-cd)pyrene

1304314-02 DASS245-0002 Naphthalene

1304314-03 DASS246-0002 Benzo(b)fluoranthene 1304314-03 DASS246-0002 Benzo(k)fluoranthene

Qualification: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-8270C

Sample: 1303525-MS1

1303525-MS2 1303525-MS3 1303525-MSD1 1303525-MSD2 1303525-MSD3

1304314-01 DASS244-0002

1304314-02 DASS245-0002

1304314-03 DASS246-0002

Qualification: Surrogate results are unavailable due to sample matrix interference(s), resulting in a dilution.

Surrogate concentrations were diluted below the calibration range.

Analysis: USEPA-8270C

Sample: 1303525-MS1

1304314-01 DASS244-0002



Total Metals by EPA 6000/7000 Series Methods

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 1304314-01 DASS244-0002 Arsenic

Qualification: Matrix QC results are not available due to sample dilution.

Analysis: USEPA-6020A

Sample/Analyte: 1304314-01 DASS244-0002 Lead

1304314-02 DASS245-0002 Lead 1304314-03 DASS246-0002 Lead

Page 15 of 17

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usi	NDARD TA	7-3					•			7	7.4	8, ~~	~ £	<i>X X</i>	PRE	TAINER STIC (P) BERVAT	TYPE or GLA		-/	3/6	, X.o 5/	619		<u>)</u>
YEAR OO 13	4 hr.	48 hr:		72 hr. SAMPL		day	14	TOCATION ID	тор обрти (FT)	BOTTOM DEPTH (FT)		MATRIX (GW, SO, SW, SD, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)		THE CO	G MAN	\$ (a) (a)				//			SQUENTS
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Page 16 of 17

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc. Individual sample results relate only to the sample tested.



S	AMPLE RECEIVING	/ LOG-IN		
TRIMATRI	X Clent JETAC TEC	h	New / Add To	1304314
LABORATORI	E S Record Record Page Line #	- 14/	Project Chemist Sample	B\$
Recorded by (Initials/Gale)	Cooler Cry Receive	id i	pz (R Gun (#202)	
1 3 111 10 15	[□] Box	Thermometer Use	d Cigital Thermone	tier (#54) See Additional Cooler Information Form
<u> </u>	O Other/		O Other (#	
1 1 1090 TO 30	Coolar# Time	Cooler #.	Time	Cooler # Time
Custody Seals:	Custody Seals:	Custody Seals:		Custody Seals:
Ø None	None	□ None		None
Present / Intact	Present / Inited Present / Not Inited	Present	1	Present / Intact
Coplant Location:	Contant Location:	Coolant Location	FRUCINISC	Cooking Location:
Dispersed / Top / Middle / Bottom	Dispersed / Top / Middle / Battom	7 (1) (1) (1) (1)	Top / Middle / Battom	Dispersed / Top / Middle / Bottom
Coolant/Temperature Taken Via:	Cookini/Temperature Taken Vis:	Coolant/Temperatu	ire Taken Via:	Coolant/Temperature Token Vis.
Lease toe / Avg 2-3 consulners	Lnose loc / Avg 2-3 containers		/ Avg Z-3 containers	Loose toe / Avg 2-3 consiners
Bagged ice / Avg 2-3 containers	Bagged too / Avg 2-3 containers		te / Avg 2-5 contemers	Bagged loe (Avg 2-3 container)
☐ Blue top / Avg 2-3 containers ☐ None / Avg 2-3 containers	Blue too / Avg 2-3 containers None / Avg 2-3 containers		Avg 2-3 containers g 2-3 containers	Blue tie / Avg 2-3 containers None / Avg 2-3 containers
Azomate Temperature Taken Via:	Alternate Temperature Taken Via:	Atternate Temperat	- E	Alternate Temperature Taken Via:
Temporature Blank (TB)	Temperature Stank (TB)	☐ Tempera	ature Blank (TB)	C Temperature Blank (TB)
1 Container	1 Conteiner	ElnoO ?		O 1 Container
Recorded C Correction Actual C	Recorded C Correction Actual C	SOMMON TO 1	Correction Actual *C	Recorded C Correction Actual C
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□ VOC Trip Blank received?.	O VOC Trip Blank received?	O VOC Trip Blan	nk received?	VOC Trip Blank received?
if <u>any</u> shaded ar	eas checked, complete Sample R	Receiving Non-Co	onformance and/o	r Inventory Form
Paperwork Received		Check Sample		
Yes No Chain of Clustody record(s)?	19 Alan Littlean and Erich	N/A Yes	No Average sample:	emperature s6° C?
Received for Lab Signed Det	· . · · · · · · · · · · · · · · · · · ·		☐ Was therma! pres	
O Shipping document?		<u> </u>		hemist Approvet Intiats/
COC Information				d Non Con Cooler - Cont Inventory Form? le Preservation Verification Form?
D. TriMatrix COC D Other 12	TRO TECH	ם נו סינ		by preserved correctly?
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	∸o. a	0	Received pre-pre	
Check COC for Accuracy		Check for Short	☐ MeOH Hold-Time Prep/A	
		☐ Bazenblogics		
Yes No Analysis Requested? Sample ID matches COC! Sample Date and Time match		D Av Bags	en en en en en en en en en en en en en e	AFTER HOURS ONLY: COPIES OF COC TO LAS AREA(S)
Sample ID matches COC1 Sample Date and Time match	hes COC?	☐ EnCores / M ☐ Formaldehyde	telminot Pre-Preserved	O NONE RECEIVED
Container type completed on		☐ Green-tegged		PRECEIVED, COC. TO LABIST
All container types indicased in	ave received?		togged 1L ambers (SV P	rep-Lab)
Sample Condition Summary		Notes C	₩	
N/A Yes No. Broken containers	nids?		ルばつ	
Missing or incomp	· · ·			
Literatule information				
Low volume receiv	ec? on-TriMatrix containers received?	Cooler Received (D		lank not Pated on COC Onlinered (Data/Time) [-51 Hour Goal Mel?]
L99349	on-i magnix comisinere received r onteiners have headspace?	100000000000000000000000000000000000000	10:75	
	ions / containers nat listed on COC?	~ NV 4.	-1X-15 - 5	/-/2 Yes / No



April 25, 2013

TETRA TECH NUS - Pittsburgh Attn: Mr. Joe Logan 661 Anderson Drive, Foster Plaza 7 Pittsburgh, PA 15220

Project: USCG Atwater Facility

Dear Mr. Joe Logan,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order

Received

Description

1304363

04/23/2013

Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/12-056-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#83658); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood Project Chemist



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Sample ID:

Client Sample ID: DASB-CF-03 1304363-01

Matrix:

Soil

Percent Solids: n/a Work Order:

1304363

Description:

Laboratory Services

Sampled:

04/19/13 09:45

Sampled By:

Tetra Tech NUS

Received:

04/23/13 18:45

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	3.3	0.10	0.016	mg/kg dry wt.	1	USEPA-6020A	04/25/13 13:21	DSC	1303713
Lead	3.3	0.10	0.0066	mg/kg dry wt.	1	USEPA-6020A	04/25/13 13:21	DSC	1303713



Client: TETRA TECH NUS - Pittsburgh

Project: USCG Atwater Facility

Client Sample ID: **DASB-CF-04** Lab Sample ID: **1304363-02**

Matrix:

QC Batch:

Soil

Unit: mg/kg dry

Dilution Factor:

1303708

Percent Solids: 84

Work Order:

1304363

Description:

Laboratory Services

Sampled:

04/23/13 11:10

Sampled By:

Tetra Tech NUS

Received:

04/23/13 18:45

Prepared: Analyzed: 04/24/13 By: JTS

04/24/13

By: ASC

Analytical Batch: 3D25003

*Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	´ Analytical Result	RL .	MDL
83-32-9	Acenaphthene	0.080U	0.080	0.022
208-96-8	Acenaphthylene	0.080U	0.080	0.020
120-12-7	Anthraœne	0.080U	0.080	0.019
56-55-3	Benzo(a)anthracene	0.0673	0.080	0.013
50-32-8	Benzo(a)pyrene	0.0703	0.080	0.011
*205- 99 -2	Benzo(b)fluoranthene	0.099	0.080	0.0091
*207 - 08- 9	Benzo(k)fluoranthene	0.052J	0.080	0.0093
191-24-2	Benzo(g,h,i)perylene	0.028J	0.080	0.0090
218-01- 9	Chrysene	0.0703	0.080	0.019
53-70-3	Dibenz(a,h)anthracene	0.080U	0.080	0.0091
206-44-0	Fluoranthene	0.13	0.080	0.021
86-73-7	Fluorene	0.080U	0.080	0.019
193-39-5	Indeno(1,2,3-cd)pyrene	0.0203	0.080	0.013
91-57-6	2-Methyinaphthalene	0.080U	0.080	0.022
91-20-3	Naphthalene	0.080U	0.080	0.027
85-01-8	Phenanthrene	0.0603	0.080	0.020
129-00-0	Pyrene	0.13	0.080	0.021

Surrogates:	% Recovery	Control Limits
2-Fluorophenol	<i>83</i>	<i>35-105</i>
Phenol-d6	· 85	40-100
Nitrobenzene-d5	<i>85</i>	<i>35-100</i>
2-Fluorobiphenyl	<i>84</i>	<i>45-105</i>
2,4,6-Tribromophenol	72	<i>35-125</i>
o-Terphenyl	<i>82</i>	<i>30-125</i>

*See Statement of Data Qualifications

Grand Ranide MI 40512 A 616 975 4500 A Fev 616 942 7462 A MANAU trimetrivle



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID: DASB-CF-04 1304363-02

Lab Sample ID: Matrix:

Percent Solids:

Soil 84

Work Order:

1304363

Description:

Laboratory Services

Sampled:

04/23/13 11:10

Sampled By:

Tetra Tech NUS

Received:

04/23/13 18:45

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	3.2	0.094	0.015	mg/kg dry wt.	1	USEPA-6020A	04/25/13 13:36	DSC 1303713
Lead	12	0.47	0.031	mg/kg dry wt.	5	USEPA-6020A	04/25/13 13:53	DSC 1303713



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Lab Camela ID.

Client Sample ID: DASB-CF-04

Lab Sample ID:

Matrix:

1304363-02

Soil

Work Order:

1304363

Description:

Laboratory Services

Sampled:

04/23/13 11:10

Sampled By:

Tetra Tech NUS

Received:

04/23/13 18:45

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time QC Analyzed By Batch
Percent Solids	84	0.1	0.1	%	1	USEPA-3550C	04/25/13 09:12 LMA 1303738



Semivolatile Organic Compounds by EPA Method 8270C

Qualification: Manual integration was performed on this sample for the analyte(s) listed below in accordance with

the TriMatrix Manual Integration SOP. All necessary documentation, including the signed review, is

included in the raw data section of the data package.

Analysis: USEPA-8270C

Sample/Analyte: 1303708-BS1 Naphthalene

1304363-02 DASB-CF-04 Benzo(b)fluoranthene 1304363-02 DASB-CF-04 Benzo(k)fluoranthene

Qualification: The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-8270C

Sample: 1304363-02 DASB-CF-04

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DATE PATE	TIME 945	SAMPLE ID DASB-CF-03 DASB-CF-07	007	agr -	B	\$0 \$0	A CONSTRUCTION	10 OF	1	20%	2/		/		<u>/</u>	01	Sami	
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This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc. Individual sample results relate only to the sample tested.

Page 7 of 8



	SAMPLE RECEIVING	/LOG-IN		
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LABORATORI		2]	ProjecyCommics Semon	i fis
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DN423-13	☐ Box: ☐ Other	Thermamator Us	od Digital Thermom	eter (#54) See Additional Cooler Information Form
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Present / Intact	Present / Intact	Present	/ Mod Intect	Present / Intact
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49 0 49	ž i	2		2
3	3	3		3
Average °C 1/7	Average *C		Average *C	Average °C
Cooler ID on COCT	Cooler 10 on COC?	Cooler ID on		Cooler ID on COC?
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f <u>any</u> shaded a	reas checked, complete Sample R	eceiving Non-C	onformance and/o	Inventory Form
Paperwork Received		Check Sample	Preservation	
Yes No. Chain of Custody record(s)?		N/A Yes	No.	
Roceived for Lab Signed/Da			_	emperature £6° C? ervetion required?
C Shipping document?		200		hemist Approval Intials:
C Z Other				d Non Con Cooler - Cont Inventory Form?
COC Information Triktatrix COC Other / E	TRO TEAH	°⊈ 0	CONTRACT CON	ic Preservation Verification Form?
COC ID Numbers: 5 %	672	र् <i>व</i>	if "No", added on	illy preserved correctly?
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Sample ID matches COC? Sample Date and Time match Container type completed on		Green-tagger		RECEIVED; COCs TO LABIS)
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Missing or incomp	1			
Segible information		<b>— — — — — — — — — —</b>	and the second	
Low volume received in appropriate or n	ved?. on-TriMatrix containers received?	Cooler Received (I		solk not ested on COC  Delivered (Date/Time)   S1 Hour Gost Met?
1	mitainers have headspece?	5.7.7	2010	
2 2023	tions / containers not listed on COC?	>UN 7=	15 1J 4:	23/3 Yes/No

Page 8 of 8

**BACKFILL AND SOIL CERTIFICATIONS** 



# TRI-CITY AGGREGATES, INC.

A SUBSIDIARY OF GENOAK MATERIALS, INC

P.O. Box 182 Holly, MI 48442 Phone (248) 634-8276 (Holly) or (810) 694-2840 (Flint) Fax (248) 634-3301

April 09, 2013

TKMS 1780 E HIGHWOOD PONTIAC MI 48340 RE: Class IIA Sand

To Whom It May Concern,

The Class IIA Sand that TKMS will be hauling from Tri-City Aggregates Inc.

will be loaded from:

Tri-City Aggregates Inc. Pit# 2 14300 Shields Rd Holly MI 48442 MDOT Pit# 63-094

All materials shipped from this location are from virgin ground and show no evidence of contamination.

Thank You,

Scott A. McKay General Manager

# TRP Sand and Gravel

6267 St. Clair Highway, China Township Michigan 48054 Ph. 810.329.4027 Fax. 810.329.6359.

April 22, 2013

To Who To May Contern:

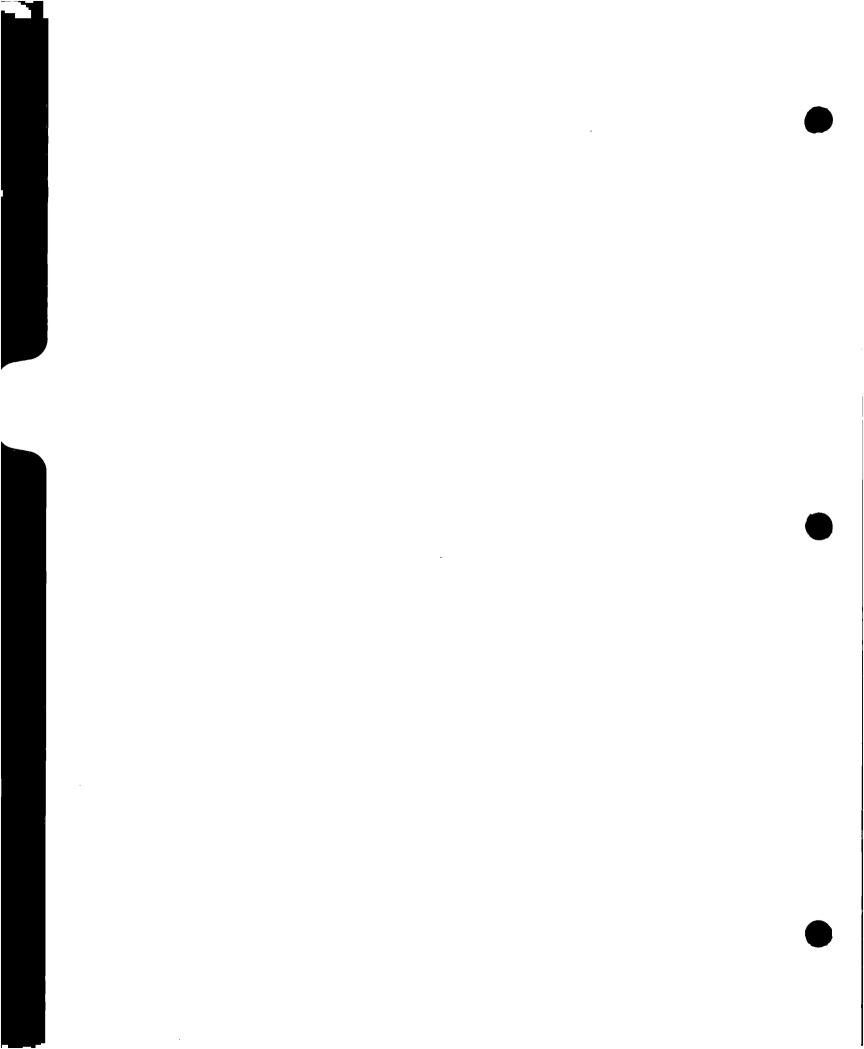
The topsoil that HM Environmental, 42826 North Walnut Street, Mt. Clemens, Michigan 48043 is delivering to you came from a borrow area that is clean from any contaminates.

Sincerely,

Dawn Pleprzak

TRP Sand and Gravel

E



# Appendix E

Laboratory Validation Reports

NOTE: PAPER COPIES CONTAIN DATA VALIDATION LETTERS ONLY. **ELECTRONIC COPIES HAVE COMPLETE DATA VALIDATION REPORTS.** 



# INTERNAL CORRESPONDENCE

TO:

J. LOGAN

DATE:

MAY 17, 2013

FROM:

A. COGNETTI

**COPIES: DV FILE** 

**SUBJECT:** 

**ORGANIC DATA VALIDATION- PAH** 

**USCG ATWATER FACILITY** 

**FULL REVIEW** 

**SAMPLE DELIVERY GROUP (SDG) - 1304171** 

SAMPLES:

31/Soil/PAH

DASB-FD-01	DASB-FD-02	DASB-FD-03	DASB224-0507
DASB225-0507	DASB226-0507	DASB227-0507	DASB238-0305
DASB239-0305	· DASB240-0305	DASB241-0305	DASB242-0305
DASB243-0305	DASS201-0002	DASS202-0002	DASS203-0002
DASS204-0002	DASS205-0002	DASS206-0002	DASS207-0002
DASS213-0002	DASS214-0002	DASS215-0002	DASS216-0002
DASS217-0002	DASS218-0002	DASS219-0002	DASS220-0002
DASS221-0002	DASS222-0002	DASS223-0002	

#### **OVERVIEW**

The sample set for USCG ATWATER FACILITY, SDG 1304171 consists of thirty-one (31) soil environmental samples. All samples were analyzed for polycyclic aromatic hydrocarbons (PAH). There are three field duplicates contained within this SDG: DASB241-03-5/DASB-FD-01, DASS222-0002/DASBFD-02 andDASS203-0002/DASB-FD-03.

The samples were collected on April 9, 10 and 11, 2013 and analyzed by TriMatrix Laboratories. All analyses were conducted in accordance with USEPA SW 846 Method 8270C for PAHs analytical and reporting protocol.

These data were evaluated based on the following parameters:

- Data Completeness
  - Holding Times and Preservation
  - Initial and Continuing Calibrations
- Laboratory Method Blank Analyses
- Surrogate Recoveries
- * Laboratory Control Sample Results
  - Matrix Spike / Matrix Spike Duplicate Results
- Internal Standard Results
  - Field Duplicate Precision
- Detection Limits
- Analyte Quantitation
  - * All quality control criteria were met for this parameter.

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in

TO: J. Logan

FROM: A. Cognetti DATE: May 17, 2013

SDG: 1304171 PAGE: 2

Appendix B.

# **PAH**

Nineteen samples in coolers numbers 1111596 and 1111222 arrived at the laboratory at 7.6°C and 6.2 °C, respectively. Positive and nondetected results were qualified as estimated (J) and (UJ), respectively.

The matrix spike (MS) percent recovery (%R) of benzo(b)fluoranthene, phenanthrene and pyrene were greater than the upper quality control limit in sample DASB238-0305. The matrix spike duplicate (MSD) and relative percent difference (RPDs) were within quality control limits. The positive benzo(b)fluoranthene, phenanthrene and pyrene results in sample DASB238-0305 were qualified as estimated (J).

The MS/MSD %Rs of benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and pyrene were greater than the upper quality control limit in sample DASS222-0002. In addition, the MS %Rs of benzo(a)anthracene and fluoranthene were greater than the upper quality control limit. The positive benzo(a)pyrene, benzo(b)fluoranthene, chrysene, pyrene, benzo(a)anthracene and fluoranthene were qualified as estimated (J) in sample DASS222-0002.

The MS/MSD %Rs of phenanthrene and pyrene were greater than the upper quality control limit in sample DASB227-0507. In addition, the MS %Rs of anthracene, benzo(a)anthracene, benzo(b)fluoranthene, chrysene and fluoranthene were greater than the upper quality control limit. The positive anthracene, benzo(b)fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene results were qualified as estimated (J).

Field duplicate imprecision was noted in the field duplicate pair DASB241-0305 and DASB-FD-01 for several PAHs. The RPDs were greater than the 50% quality control limit for acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno (1,2,3-cde)pyrene, phenanthrene and pyrene. The positive results of the aforementioned analytes were qualified as estimated (J) in the field duplicate pair DASB241-0305 and DASB-FD-01.

Field duplicate imprecision was noted in the field duplicate pair DASS222-0002 and DASB-FD-02 for several PAHs. The RPDs were greater than the 50% quality control limit for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene. In addition, the variance was greater than 2X the reporting limit for anthracene. The positive results of the aforementioned analytes were qualified as estimated (J) in the field duplicate pair DASS222-0002 and DASB-FD-02.

Field duplicate imprecision was noted in the field duplicate pair DASS203-0002 and DASB-FD-03 for several PAHs. The RPDs were greater than the 50% quality control limit for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene. In addition, the variance was greater than 2X the reporting limit for anthracene, benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene. The positive results of the aforementioned analytes were qualified as estimated (J) in the field duplicate pair DASS203-0002 and DASB-FD-03.

TO: J. Logan

FROM: A. Cognetti DATE: May 17, 2013 SDG: 1304171

PAGE: 3

# **Additional Comments:**

Several samples were diluted for analysis resulting in elevated reporting limits.

Sample	Dilution Factor
DASB-FD-03	5X
DASB226-0507	5X
DASS201-0002	5X
DASS202-0002	5X
DASS203-0002	5X
DASS204-0002	5X
DASS205-0002	5 <b>X</b>
DASS206-0002	5X
DASB-FD-02	10X
DASB240-0305	10X
DASB241-0305	10X
DASS213-0002	10X
DASS214-0002	10X
DASS215-0002	. 10X
DASS216-0002	10X
DASS218-0002	10X
DASS222-0002	10X
DASS223-0002	10X
DASB243-0305	20X
DASS219-0002	20X
DASS217-0002	50X

Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

Nondetected results were reported to the reporting limit.

# **EXECUTIVE SUMMARY**

Laboratory Performance: None.

Other factors affecting data quality: Sample temperature noncompliance was noted affecting nineteen samples. Matrix spike/matrix spike duplicate percent recoveries did not meet quality control limits for samples DASB238-0305, DASS222-0002 and DASB227-0507 resulting in the qualification of data. Field duplicate imprecision was noted in all the field duplicate pairs.

TO: J. Logan

FROM: A. Cognetti DATE: May 17, 2013

SDG: 1304171 PAGE: 4

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (October 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech

Ann Cognetti

Chemist/Data Validator

etra Tech

Joseph A. Samchuck

Data Validation Quality Assurance Officer

# Attachments:

Appendix A – Qualified Analytical Results

Appendix B - Results as Reported by the Laboratory

Appendix C – Support Documentation

# APPENDIX A QUALIFIED ANALYTICAL RESULTS

#### **Qualifier Codes:**

A = Lab Blank Contamination

B = Field Blank Contamination

C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

C01 = GC/MS Tuning Noncompliance

D = MS/MSD Recovery Noncompliance

E = LCS/LCSD Recovery Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = ICP PDS Recovery Noncompliance; MSA's r < 0.995

K = ICP Interference - includes ICS % R Noncompliance

L = Instrument Calibration Range Exceedance

M = Sample Preservation Noncompliance

N = Internal Standard Noncompliance

N01 = Internal Standard Recovery Noncompliance Dioxins

N02 = Recovery Standard Noncompliance Dioxins

N03 = Clean-up Standard Noncompliance Dioxins

O = Poor Instrument Performance (i.e., base-time drifting)

P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = RPD between columns/detectors >40% for positive results determined via GC/HPLC

V = Non-linear calibrations; correlation coefficient r < 0.995

W = EMPC result

X = Signal to noise response drop

Y = Percent solids <30%

Z = Uncertainty at 2 standard deviations is greater than sample activity

Z1 = Tentatively Identified Compound considered presumptively present

Z2 = Tentatively Identified Compound column bleed

Z3 = Tentatively Identified Compound aldol condensate

NOAME E	D400004.000			DAODOGE SES	<del>,</del> (200		DA00000 050	-		DACDOOT OF	17	<b></b>
	<u> </u>	<i>'</i>		<del></del>		·		<u> </u>		1	"	
<del></del>	1304185-08									<u> </u>		
SAMP_DATE	4/11/2013			4/11/2013			4/11/2013					
QC_TYPE	NM			NM			NM			NM		
UNITS	MG/KG			MG/KG			MG/KG			MG/KG		·
PCT_SOLIDS	85.0			79.0			76.0	_		84.0		
DUP_OF												
	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
:	0.02	U		0.021	U		0.11	U		0.013	J	P
•	0.015	J	Р	0.19			0.15			0.034		
	0.02	U		0.0061	J	Р	0.11	U		0.012	J	Ρ
	0.014	J	Р	0.037			0.32			0.064	J_	D
	0.041			0.067			0.41			0.21	J	D
	0.033			0.066			0.3			0.18		
IE .	0.039			0.071			0.34			0.22	J	D
	0.02			0.034			0.16			0.084		
IE .	0.019	J	Р	0.037			0.17			0.12	!	
_	0.039	•		0.063			0.35			0.19	J	D
NE	0.0037	J	P	0.007	J	Р	0.038	J	Р	0.019	J	Р
	0.067			0.13			0.98			0.33	J	D
	0.0069	J	Р	0.068			0.11	J	Р	0.051		
E	0.013	J	Р	0.032			0.14			0.082		
	0.02	Ū		0.018	J	Р	0.04	J	Р	0.016	J	Р
	0.058			0.09			0.5			0.23	J	D
_	. 0.081			0.15			0.97			0.4	J	D
	UNITS PCT_SOLIDS DUP_OF	LAB_ID 1304185-08 SAMP_DATE 4/11/2013 QC_TYPE NM UNITS MG/KG PCT_SOLIDS 85.0 DUP_OF RESULT  0.02 0.015 0.024 0.041 0.033 IE 0.039 IE 0.039 SNE 0.0037 0.0669 E 0.013	LAB_ID 1304185-08 SAMP_DATE 4/11/2013 QC_TYPE NM UNITS MG/KG PCT_SOLIDS 85.0 DUP_OF RESULT VQL 0.015 J 0.02 U 0.014 J 0.033 IE 0.039 IE 0.039 SNE 0.0037 J 0.0067 0.0069 J E 0.013 J 0.02 U 0.014 J 0.039 SNE 0.0037 J 0.0069 J E 0.0058	LAB_ID 1304185-08  SAMP_DATE 4/11/2013  QC_TYPE NM  UNITS MG/KG  PCT_SOLIDS 85.0  DUP_OF  RESULT VQL QLCD  0.015 J P  0.02 U  0.014 J P  0.033  IE 0.039  IE 0.039  IE 0.019 J P  0.039  INE 0.039  INE 0.007  0.0069 J P  0.002 U  0.0058	LAB_ID	LAB_ID	LAB_ID	LAB_ID	LAB_ID	LAB_ID	LAB   ID   1304185-08   1304185-09   1304185-10   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-11   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   1304185-10   13041	LAB_ID   1304185-08

PROJ_NO: 02435	NSAMPLE	DASB238-0305			DASB239-030	DASB239-0305			5		DASB241-0305			
SDG: 1304171	LAB_ID 1304171-01				1304171-02			1304171-03			1304171-04			
FRACTION: PAH	SAMP_DATE	4/9/2013			4/9/2013			4/9/2013			4/9/2013			
MEDIA: SOIL	QC_TYPE	NM			NM		-	NM			NM			
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG			
	PCT_SOLIDS	83.0			82.0 ⁻			82.0		-	81.0			
	DUP_OF				- ,									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
2-METHYLNAPHTHALEN	E	0.02	UR	М	0.02	UR	М	0.2	UR	M	0.21	UR	М	
ACENAPHTHENE		0.011	J	MP	0.07	J	М	0.13	J	MP	0.23	J	GM	
ACENAPHTHYLENE		0.007	J	MP	0.02	UR	М	0.083	J	MP	0.21	UR	М	
ANTHRACENE		0.015	J	MP	0.02	ÜR	М	0:53	J	М	0.57	J	GM	
BENZO(A)ANTHRACENE		0.11	J	М	0.0062	J	MP	1.6	J	M	1.3	J	GM	
BENZO(A)PYRENE		0.13	J	М	0.0066	J	MP	1.4	J	M	1.1	J	GM	
BENZO(B)FLUORANTHE	NE .	0.12	J	DM	0.0046	J	MP	1.5	J	М	1.2	J	GM	
BENZO(G,H,I)PERYLENE		0.088	J	М	0.0029	J	MP	0.65	J	М	0.57	J	GM	
BENZO(K)FLUORANTHE	NE	0.083	J	М	0.0046	J	MP	0.76	j	М	0.64	J	GM	
CHRYSENE		0.1	J	М	0.0066	J	MP	1.6	J	М	1.3	j	GM	
DIBENZO(A,H)ANTHRAC	ENE	0.02	J	М	0.02	UR	М	0.15	J	MP	0.11	J	GMP	
FLUORANTHENE		0.13	J	M	0.01	J	MP	2.9	J	М	2.3	J	GM	
FLUORENE		0.0065	J	MP	0.02	UR	M	0.15	J	MP	0.26	J	GM	
INDENO(1,2,3-CD)PYRE	NE	0.076	J	М	0.0033	J	MP	0.61	J	М	0.55	J	.GM	
NAPHTHALÉNE		0.02	UR	М	0.02	UR	М	0.2	UR	М	0.21	UR	M	
PHENANTHRENE		0.066	J	DM	0.0091	J	MP	. 1.6	J	М	2.1	J	GM	
PYRENE		0.19	J	DM	0.012	j	MP	2.9	J	М	3	J	GM	

2 of 8 5/14/2013

PROJ_NO: 02	NSAMPLE	DASB242-030	5	<del></del> .	DASB243-030	5	<del></del>	DASB-FD-01			DASB-FD-02		
SDG: 1304171	LAB_ID	1304171-05	<u> </u>		1304171-06			1304171-07			1304171-19		
FRACTION: PAH	SAMP_DATE	4/9/2013			4/9/2013			4/9/2013			4/10/2013		
MEDIA: SOIL	QC TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG		•	MG/KG		
	PCT_SOLIDS	85.0		<del></del>	81.0	· <u>-</u> · -		81.0			84.0		
	DUP_OF		· ·					DASB241-030	5		DASS222-000	2	
PARAMETER	1	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALENE		0.51	J	М	0.41	UR	М	0.02	J	MP	0.2	UR	М
ACENAPHTHENE	١,	0.018	J	MP	0.85	J	М	0.065	J	GM	0.21	J	М
ACENAPHTHYLENE		. 0.02	UR	М	0.41	UR	М	0.023	J	М	0.058	J	MP
ANTHRACENE		0.031	J	М	2.4	J	М	0.16	J	GM	0.53	J	GM
BENZO(A)ANTHRACENE		0.033	J .	М	4.5	J	М	0.56	J	GM	1.4	j	GM
BENZO(A)PYRENE		0.013	J	MP	4.2	j	М	0.34	J	GM	1.4	J	GM
BENZO(B)FLUORANTHEN	IE	0.023	J	М	4	J	М	0.47	J	GM	1.6	J	GM
BENZO(G,H,I)PERYLENE	<del>-</del>	0.011	J	MP	2.6	J	М	0.2	J	GM	0.86	J	GM
BENZO(K)FLUORANTHEN	İΕ	0.016	J	MP	2.2	J	М	0.23	J	GM	0.92	J	GM
CHRYSENE		0.033	J	М	4.5	J	М	0.39	J	GM	1.2	J	GM
DIBENZO(A,H)ANTHRACE	NE	0.0028	J	MP	0.42	J	М	0.044	J	GM	0.19	J	MP
FLUORANTHENE		0.098	J	М	8.7	J .	М	0.74	J	GM	2.3	J	GM
FLUORENE		0.027	J	м	0.68	J	М	0.086	J	GM	0.19	J	MP
INDENO(1,2,3-CD)PYREN	E .	0.0073	J	MP	2	J	М	0.17	J	GM	0.76	J	GM
NAPHTHALENE		0.75	J	М	0.41	ŪR	М	0.017	J	MP	0.2	UR	М
PHENANTHRENE		0.1	J	М	6.9	J	М	0.68	J	GM	1.7	J	GM
PYRENE		0.1	J	М	11	J	М	0.85	J	GM	2.6	J	GM

PROJ_NO: 02435	NSAMPLE	DASB-FD-03			DASS201-000	DASS201-0002					DASS203-000	DASS203-0002				
SDG: 1304171	LAB_ID	1304185-12			1304185-01			1304185-02			1304185-03	-				
FRACTION: PAH	SAMP_DATE	4/11/2013		· · · · · · · · · · · · · · · · · · ·	4/11/2013			4/11/2013			4/11/2013		<del></del>			
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM					
	UNITS	MG/KG			MG/KG	•		MG/KG			MG/KG					
	PCT_SOLIDS	83.0			81.0	-		79.0			83:0					
	DUP_OF	DASS203-000	2													
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD			
2-METHYLNAPHTHALE	NE	0.1	U		0.1	U		0.037	J	P	0.1	U				
ACENAPHTHENE		0.064	J	Р	0.1	U		0.26			0.1	U				
ACENAPHTHYLENE		0.046	J	Р	0.1	U		0.11	U		0.1	U				
ANTHRACENE		0.47	J	G	0.055	J	Р	0.68			0.093	J	GP			
BENZO(A)ANTHRACEN	IE .	0.92	J	G	0.27			0.82			0.22	J	G			
BENZO(A)PYRENE		0.63	J	G	0.23	-		0.64			0:2	J	G			
BENZO(B)FLUORANTH	ENE	0.81	J	G	0:28			0.76			0.23	J	G			
BENZO(G,H,I)PERYLEN	IE	0.3	J	G	0.11	<u> </u>		0.27			0.097	J	GP			
BENZO(K)FLUORANTH	ENE	0.4	J .	G	0.18			0.46			0.14	J	G			
CHRYSENE		0.79	J	G	0.26			0.91			0.24	J	G			
DIBENZO(A,H)ANTHRA	CENE	0.12			0.026	J	P	0.11			0.022	J	Р			
FLUORANTHENE		1.7	J	G	0:42			1.6			0.41	J	G			
FLUORENE		0.12		1	0.028	J	P	0.37			0.1	U				
INDENO(1,2,3-CD)PYRI	ENE	0.29	J	G	0.095	J	Р	0.26			0.081	J	GP			
NAPHTHALENE		0.1	บ		0.1	U		0.052	J	Р	0.1	U				
PHENANTHRENE		1.5	J	G	0.28			1.9			0.21	J	G			
PYRENE	·	1.9	J	G	0.49			1.6			0.44	J	G			

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PROJ_NO: 02	NSAMPLE	DASS204-000	)2		DASS205-000	2		DASS206-000	2		DASS207-000	2		
SDG: 1304171	LAB_ID	1304185-04			1304185-05			1304185-06			1304185-07			
FRACTION: PAH	SAMP_DATE	4/11/2013			4/11/2013			4/11/2013			4/11/2013			
MEDIA: SOIL	QC_TYPE	NM			NM	NM					NM			
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG	_		
	PCT_SOLIDS	79.0			82.0			78.0			85.0			
	DUP_OF													
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	OLCD	
2-METHYLNAPHTHALE	NE	0.11	U		0.081	J	P	0.11	U		0:0067	J	P	
ACENAPHTHENE		0.11	U		0.23			0.035	J	P	0.016	J	Р	
ACENAPHTHYLENE		. 0.11	U		0.1	U		0.11	U		0.014	J	Р	
ANTHRACENE		0.078	J	P	0.51			0.18			0.057			
BENZO(A)ANTHRACEN	E	0.18			0.89			0.29			0.26			
BENZO(A)PYRENE		0.18			0.74			0.26			0.2		]	
BENZO(B)FLUORANTH	ENE	0.23			0.95			0.35			0.23			
BENZO(G,H,I)PERYLEN	E	0.11	J	P	0.35			0.13			0.093			
BENZO(K)FLUORANTH	ENE	0.11			0.5			0.21			0.12		Ī	
CHRYSENE		0.22			0.84			0.35			0.22		T	
DIBENZO(A,H)ANTHRA	CENE	0.021	J	Р	0.084	J	Р	0.055	J	Р	0.025			
FLUORANTHENE		0.31			1.5			0.49			0.31			
FLUORENE		0.11	U		0.19			0.057	J	Р	0.02		1	
INDENO(1,2,3-CD)PYRE	NE	0.088	J	Р	0.32			0.1	J	Р	0.089			
NAPHTHALENE	•	0.11	U		0.42			0.11	U		0.02	U		
PHENANTHRENE		0.17			1.5			0.41			0.2			
PYRENE		0.36			1.8			0.57			0.41		1	

DDO I NO. 02425	NSAMPLE	DASS213-000	2		DACC214 000	2		DASS215-000	2		DASS216-000	2	
PROJ_NO: 02435			۷		DASS214-000							<u> </u>	
SDG: 1304171	LAB_ID	1304171-08			1304171-09			1304171-10			1304171-11		
FRACTION: PAH	SAMP_DATE	4/10/2013			4/10/2013			4/10/2013			4/10/2013		
MEDIA: SOIL	QC_TYPE	NM			ИМ			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG		_	MG/KG		
	PCT_SOLIDS	87.0			79:0			90.0	•		81.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALENE		0.19	UR	M	0.21	UR	М	0.19	UR	M	0.21	UR	М
ACENAPHTHENE		0.14	J	MP	0.21	UR	М	0.19	UR	M	0.21	UR	М
ACENAPHTHYLENE		0:089	J	MP	0.21	UR	М	0.19	UR	М	0.21	UR	М
ANTHRACENE		0.44	J	М	0.091	J	MP	0.17	J	MP	0.21	UR	M
BENZO(A)ANTHRACENE		1,1	J	М	0.31	J	М	0.24	J	M	0.18	J	MP
BENZO(A)PYRENE		1.2	J	М	0:38	J	М	0.25	J	М	0.2	J	MP
BENZO(B)FLUORANTHEN	E	1.3	J	М	0:58	J	М	0.26	J	M	0.17	J	MP
BENZO(G,H,I)PERYLENE		0.69	J	М	0.32	J	M	0.1	J	MP	0.12	J	MP
BENZO(K)FLUORANTHEN	E	0.9	J	М	0.4	J	М	0.21	J	М	0.15	J	MP
CHRYSENE		1.2	J	М	0.46	J	M	0.3	J	М	0.2	J	MP
DIBENZO(A,H)ANTHRACE	NE	0.25	J	М	0.1	J	MP	0.19	UR	М	0.21	UR	М
FLUORANTHENE	<u> </u>	2.5	J	М	0.47	J	М	0.36	J	М	0.27	J	М
FLUORENE		0.12	J	MP	0.21	UR	М	0.19	UR	М	0.21	UR	М
INDENO(1,2,3-CD)PYREN	<u> </u>	0.61	J	М	0.25	J	M	0.19	UR	М	0.091	J	MP
NAPHTHALENE		0.085	J	MP	0.21	UR	M	0.19	UR	М	0.21	UR	М
PHENANTHRENE		1.9	J	М	0.26	J	M	0.24	J	М	0.11	J	MP
PYRENE		2.4	j	М	0.73	J	М	0.53	J	М	0.35	J	М

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PROJ_NO: 02	NSAMPLE	DASS217-000	2		DASS218-000	2	<u> </u>	DASS219-000	2		DASS220-000	)2	
SDG: 1304171	LAB_ID	1304171-12			1304171-13			1304171-14			1304171-15		
FRACTION: PAH	SAMP_DATE	4/10/2013			4/10/2013			4/10/2013			4/10/2013		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	87.0			85.0		_	79.0			88.0		
	DUP_OF											-	
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALE	NE	0.96	UR	М	0.2	UR	M	0.42	UR	М	0.0068	J	MP
ACENAPHTHENE		0.96	UR	М	0.27	J	М	0.92	J	М	0.061	J	М
ACENAPHTHYLENE		0.96	UR	М	0.2	UR	М	0.42	UR	М	0.0068	J	MP
ANTHRACENE		0.48	J	MP	0.92	J	М	3.5	J	М	0.25	J	М
BENZO(A)ANTHRACEN	E	2	J	М	2	J	M	7	J	M	0.38	J	М
BENZO(A)PYRENE		2.1	J	М	1.8	J	M	5.6	J	М	0.27	J	М
BENZO(B)FLUORANTH	ENE	2.2	J	М	2.1	J	М	6.1	J	М	0.27	J	М
BENZO(G,H,I)PERYLEN	IE .	1.4	J	м	1.1	J	M	2.9	J	М	0.13	J	М
BENZO(K)FLUORANTH	ENE	1.2	J	М	1.1	J	M	4.7	J	М	0.16	J	М
CHRYSENE		2.1	J	М	2.1	J	М	6	J	М	0.29	J	M-
DIBENZO(A,H)ANTHRA	CENE	0.28	J	MP	0.22	J	М	0.64	J	М	0.031	J	М
FLUORANTHENE		3.7	J	M	3.9	J	М	13	J	М	0.61	J	М
FLUORENE		0.96	UR	М	0.25	J	М	1.4	J ·	М	0.091	J	М
NDENO(1,2,3-CD)PYRE	NE	1	J	м	0.9	J	М	2.7	J	М	0.12	J	М
NAPHTHALENE		0.96	UR	M	0.2	UR	М	0.42	UR	М	0.019	UR	м
PHENANTHRENE	-	1.8	J	М	3	J	М	8.9	<del></del>	М	0.65	J	М
PYRENE		4.9	J	М	5	J	м	14	J	м	0.71	J	м

PROJ_NO: 02435	NSAMPLE	DASS221-000	2		DASS222-000	2		DASS223-000	2	
SDG: 1304171	LAB_ID	1304171-16		-	1304171-17			1304171-18		
FRACTION: PAH	SAMP_DATE	4/10/2013			4/10/2013			4/10/2013		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	88.0		_	84.0			85.0		-
	DUP_OF			-						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALE	NE	0.019	UR	М	0.2	⊍R	M	0.2	UR	М
ACENAPHTHENE		0.013	J	MP	0.2	⊍R	M	0.2	UR	М
ACENAPHTHYLENE		0:0054	J	MP	0.2	UR	M	0.2	UR	M
ANTHRACENE		0.036	J	М	0.12	J	GMP	0.22	7	M
BENZO(A)ANTHRACEN	E	0.11	J	М	0.6	Ĵ	DGM	1.4	7	М
BENZO(A)PYRENE		0.1	J	M	0.72	J	DGM	1.3	J	М
BENZO(B)FLUORANTH	ENE	0.11	J	M	0.78	J	DGM	1.6	J	M
BENZO(G,H,I)PERYLEN	IE .	0.066	J	M	0.44	J	GM	0.7	J	M
BENZO(K)FLUORANTH	ENE	0.084	J	М	0.45	J	GM	0.79	J	М
CHRYSENE		0.11	J	М	0.62	J	DGM	1.5	J.	М
DIBENZO(A,H)ANTHRA	CENE	0.017	J	MP	0.097	J	MP	0.16	J	MP
FLUORANTHENE		0.19	J	М	0.89	J	DGM	2.4	J	M
FLUORENE	·	0.013	J	MP	0.2	UR	М	0.2	ÚR	M
INDENO(1,2,3-CD)PYRE	ENE	0.051	J	М	0.37	J	GM	0.63	J	M
NAPHTHALENE		0.019	UR	М	0.2	UR	М	0.2	UR	М
PHENANTHRENE		0.13	J	M	0.37	J	GM	0.21	J	М
PYRENE		0.22	J	м	1.1	J	DGM	2,4	J	М



# **Tetra Tech**

# INTERNAL CORRESPONDENCE

TO: J. LOGAN

DATE:

May 17, 2013

FROM:

**MEGAN CARSON** 

**COPIES: DV FILE** 

SUBJECT:

INORGANIC DATA VALIDATION -ARSENIC AND LEAD

**USCG ATWATER FACILITY** 

SAMPLE DELIVERY GROUP (SDG) - 1304171

SAMPLES:

31/Soil/

01700111		
DASB-FD-01	DASB-FD-02	DASB-FD-03
DASB224-0507	DASB225-0507	DASB226-0507
DASB227-0507	DASB238-0305	DASB239-0305
DASB240-0305	DASB241-0305	DASB242-0305
DASB243-0305	DASS201-0002	DASS202-0002
DASS203-0002	DASS204-0002	DASS205-0002
DASS206-0002	DASS207-0002	DASS213-0002
DASS214-0002	DASS215-0002	DASS216-0002
DASS217-0002	DASS218-0002	DASS219-0002
DASS220-0002	DASS221-0002	DASS222-0002
D 4 0 0 0 0 0 0 0 0 0		

DASS223-0002

#### Overview

The sample set for USCG Atwater Facility, SDG 1304171 consists of thirty one (31) soil environmental samples. This SDG contained three field duplicate pairs: DASB-FD-01/DASB241-0305, DASB-FD-02/DASS222-0002, and DASB-FD-03/DASS203-0002.

All samples were analyzed for arsenic and lead. The samples were collected by TetraTech on April 9th, 10th, and 11th, 2013 and analyzed by TriMatrix Laboratories Inc. Metals analyses were conducted using method 6020A. The data contained in this SDG were validated with regard to the following parameters:

- Data Completeness
- Holding Times
- Instrument performance and tuning
- Initial and Continuing Calibrations
- Laboratory Method Blank Analyses
- Surrogate Recoveries
- Internal Standard Recoveries
- * Field Duplicate Precision
- Laboratory Control Sample (LCS) Results
- Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Results
- Detection Limits
- Analyte Quantitation
  - * Quality control criteria were met for this parameter.

Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

#### **METALS:**

The matrix spike duplicate for preparation batch 1303272 had a percent recovery > 120% for arsenic. The recoveries for the MS, post-digestion spike (PDS), and LCS were within QC limits. The positive arsenic result for sample DASS222-0002 was qualified as estimated (J).

## Notes:

The following contaminant was detected in the calibration blank at the following maximum concentration:

MaximumActionAnalyteConcentrationLevelLead0.00016 mg/L0.08 mg/kg

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids, and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Positive results less than the blank action level were raised to the reporting limit and were qualified as non-detected (U).

Internal standard recoveries were not listed on a summary form. The validator verified that all recoveries met the 70%-120% acceptance criteria with the raw data.

Sample DASS220-0002 was re-digested for lead because the initial concentration reported by the laboratory was higher than previous sampling data. Additionally the project manager requested the recheck of the sample result because the x-ray fluorescence (XRF) measurement of the sample was approximately 22 mg/kg. The re-digestion and re-analysis sample concentration for lead was comparable (at 13 mg/kg) to XRF data. The re-analysis data was used for validation.

Results were reported on a dry weight basis.

#### **Executive Summary**

Laboratory Performance: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for "National Functional Guidelines for Inorganic Data Validation", October 2004, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", October 2010.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra/Tech Megan Carson

Chemist/Data Validator

Tetra Tech

Joseph A. Samchuck Quality Assurance Officer

# Attachments:

- 1,
- Appendix A Qualified Analytical Results Appendix B Results as reported by the Laboratory Appendix C Support Documentation 2.

# APPENDIX A QUALIFIED ANALYTICAL RESULTS

#### **Qualifier Codes:**

A = Lab Blank Contamination

B = Field Blank Contamination

C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

C01 = GC/MS Tuning Noncompliance

D = MS/MSD Recovery Noncompliance

E = LCS/LCSD Recovery Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = ICP PDS Recovery Noncompliance; MSA's r < 0.995

K = ICP Interference - includes ICS % R Noncompliance

L = Instrument Calibration Range Exceedance

M = Sample Preservation Noncompliance

N = Internal Standard Noncompliance

N01 = Internal Standard Recovery Noncompliance Dioxins

N02 = Recovery Standard Noncompliance Dioxins

N03 = Clean-up Standard Noncompliance Dioxins

O = Poor Instrument Performance (i.e., base-time drifting)

P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Other problems (can encompass a number of issues; i.e.chromatography, interferences,

Q = etc.)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = RPD between columns/detectors >40% for positive results determined via GC/HPLC

V = Non-linear calibrations; correlation coefficient r < 0.995

W = EMPC result

X = Signal to noise response drop

Y = Percent solids <30%

Z = Uncertainty at 2 sigma deviation is less than sample activity

Z1 = Tentatively Identified Compound considered presumptively present

Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02435	NSAMPLE	DASB224-050	7		DASB225-050	)7	<del>-</del> -	DASB226-0	507		DASB227-0	507			
SDG: 1304171	LAB_ID	1304185-08			1304185-09		_	1304185-10			1304185-11				
FRACTION: M	SAMP_DATE	4/11/2013			4/11/2013		· · · · · · · · · · · · · · · · · · ·	4/11/2013			4/11/2013				
MEDIA: SOIL	QC_TYPE	NM.			NM			NM			NM				
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG	+ ····			
	PCT_SOLIDS	85.0			79.0			76.0			84.0		-		
_	DUP_OF														
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL.	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD		
ARSENIC		5.1			2.6	i		4	.2		5	5.9			
LEAD		63			31			3	35		-	72			

PROJ_NO: 02	NSAMPLE	DASB238-030	5		DASB239-03	05		DASB240-030	)5		DASB241-030	5	
SDG: 1304171	LAB_ID	1304171-01			1304171-02			1304171-03			1304171-04		
FRACTION: M	SAMP_DATE	4/9/2013			4/9/2013			4/9/2013			4/9/2013		
MEDIA: SOIL	QC_TYPE	NM.		NM			NM			NM			
,	UNITS				MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	83.0	•		82.0			82.0	•		81.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		4.5			5.	5		7.2	2		7.7		
LEAD		56			1	3		120	)		320		

PROJ_NO: 02435	NSAMPLE	DASB242-03	05		DASB243-030	5		DASB-FD-01	l		DASB-FD-02				
SDG: 1304171	LAB_ID	1304171-05			1304171-06			1304171-07	-		1304171-19				
FRACTION: M	SAMP_DATE	4/9/2013			4/9/2013			4/9/2013			4/10/2013	-			
MEDIA: SOIL	QC_TYPE	NM			NM			NM	-		NM				
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG	<del>-   </del>			
	PCT_SOLIDS	85.0	_		81.0			81.0		_	84.0	<del></del>			
	DUP_OF							DASB241-03	305		DASS222-00	32			
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD		
ARSENIC			7		6.2				8		4.0	3			
LEAD		1	8	-	38			27	0		470				

PROJ_NO: 02	NSAMPLE	DASB-FD-03			DASS201-000	2	·	DASS202-000	12		DASS203-00	02	
SDG: 1304171	LAB_ID	1304185-12			1304185-01			1304185-02			1304185-03		
FRACTION: M	SAMP_DATE	4/11/2013			4/11/2013			4/11/2013			4/11/2013		
MEDIA: SOIL	QC_TYPE	NM	-		NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	83.0			81.0			79.0			83.0		
	DUP_OF	DASS203-000	2										
PARAMETER	-	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC	-	5.3			6.7			6.3			5.2		
LEAD		29			66			39			29		

PROJ_NO: 02435	NSAMPLE	DASS204-000	2		DASS205-0	002		DASS206-000	)2		DASS207-000	2	
SDG: 1304171	LAB_ID	1304185-04	-		1304185-05			1304185-06			1304185-07		
FRACTION: M	SAMP_DATE	4/11/2013.			4/11/2013			4/11/2013			4/11/2013		
MEDIA: SOIL	QC_TYPE	NM			NM	-		NM			NM		
	UNITS				MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	79.0		<del>-</del> -	82.0			78:0			85:0		
	DUP_OF	-											
PARAMETER	<u> </u>	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		6.2	-		6	.1		8.9	)		6.1		
LEAD		40				21		410			99		

PROJ_NO: 02	NSAMPLE	DASS213-000	2		DASS214-0	002		DASS215-000	02		DASS216-0	002	
SDG: 1304171	LAB_ID	1304171-08			1304171-09		_	1304171-10			1304171-11		
FRACTION: M	SAMP_DATE	4/10/2013			4/10/2013			4/10/2013			4/10/2013		
MEDIA: SOIL	QC_TYPE	NM		-	NM	-		NM			NM		
	UNITS	MG/KG			MG/KG		· ·	MG/KG			MG/KG		
	PCT_SOLIDS	87.0			79:0			90.0			81.0		
	DUP_OF			· · · · · · · · · · · · · · · · · · ·									
PARAMETER	•	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		8.3			8	.7		7.2	2		. 6	.8	
LEAD	<del></del>	720			29	90		370	)		18	30	

PROJ_NO: 02435	NSAMPLE	DASS217-000	2	<del></del>	DASS218-	0002		DASS219-000	02		DASS220-0	002	
SDG: 1304171	LAB_ID	1304171-12			1304171-1	3		1304171-14			1304171-15		
FRACTION: M	SAMP_DATE	4/10/2013			4/10/2013	-		4/10/2013			4/10/2013	<del> </del>	
MEDIA: SOIL	QC_TYPE	NM						NM			NM		
	UNITS MC				MG/KG	-		MG/KG			MG/KG		
	PCT_SOLIDS	87.0			85.0			79.0			88.0		
	DUP_OF			·						_			
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		9				9.2		€			18		
LEAD		530				660		270					

											<del> ,</del>		
PROJ_NO: 02	NSAMPLE	DASS220-0	002RE		DASS221-00	02	<b>,</b>	DASS222-00	002		DASS223-00	02	
SDG: 1304171	LAB_ID	1304171-15	,		1304171-16			1304171-17			1304171-18		_
FRACTION: M	SAMP_DATE	4/10/2013	•		4/10/2013			4/10/2013			4/10/2013		
MEDIA: SOIL	QC_TYPE	NM	NM MG/					NM			NM		
UNITS		MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	88.0			88.0			84.0			85.0		
	DUP_OF	-				-	·						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC			Ì	-	5.	1		5	.9 J	D	4.2		
LEAD			13		3!	5		72	20		16		



# INTERNAL CORRESPONDENCE

TO:

J. LOGAN

DATE:

**MAY 13, 2013** 

FROM:

A. COGNETTI

**COPIES:** 

DV FILE

SUBJECT:

**ORGANIC DATA VALIDATION - PAH** 

**USCG ATWATER FACILITY** 

**SAMPLE DELIVERY GROUP (SDG) - 1304208** 

SAMPLES:

17/Solid/PAH

DASB228-0305	DASB229-0305	DASB230-0305	DASB231-0305
DASB232-0305	DASB233-0305	DASB234-0305	DASB235-0305
DASB236-0305	DASB237-0305	DASBFD-04	DASBFD-05
DASS208-0002	DASS209-0002	DASS210-0002	DASS211-0002
DACCO10 0000			

DASS212-0002

# **OVERVIEW**

The sample set for USCG Atwater Facility, SDG 1304208 consists of seventeen (17) soil environmental samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). There are two (2) field duplicate pairs included within this SDG: DASBFD-04/DA-SB-229-0305 and DASBFD-05/DA-SB-231-0305.

The samples were collected by Tetra Tech on April 11 and 12, 2013 and analyzed by TriMatrix Laboratories. USEPA SW 846 Method 8270C for PAHs analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- * Data Completeness
- Holding Times
- GC/MS Tuning
- Initial and Continuing Calibrations
  - Laboratory Blank Analyses
- Surrogate Recoveries
- Laboratory Control Sample Results
- Matrix Spike / Matrix Spike Duplicate Results
- Internal Standard Recoveries
- Field Duplicate Precision
- Analyte Quantitation
- Analyte Identification
  - Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

# Additional Comments:

The nondetected results were reported to the laboratory reporting limit

Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

TO: J. Logan FROM: A. Cognetti SDG: 1304208 DATE: May 13, 2013

PAGE 2

# **EXECUTIVE SUMMARY**

Laboratory Performance Issues: None.

Other factors affecting data quality: Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (October 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech

Ann Cognetti

Chemist/Data Validator

Tetra Tech

Joseph A. Samchuck

Data Validation Quality Assurance Officer

## Attachments:

Appendix A – Qualified Analytical Results

Appendix B - Results as Reported by the Laboratory

Appendix C – Support Documentation

# APPENDIX A QUALIFIED ANALYTICAL RESULTS

PROJ_NO: 02	NSAMPLE	DASB228-030	5		DASB229-030	5 -		DASB230-030	5		DASB231-030	5	
SDG: 1304208	LAB_ID	1304208-01			1304208-02			1304208-03			1304208-04		
FRACTION: PAH	SAMP_DATE	4/11/2013			4/11/2013			4/11/2013			4/11/2013		
MEDIA: SOIL	QC_TYPE NM		NM			NM			NM				
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	86.0			90.0		·	86.0			86.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALEN	VE.	0.019	U		0.018	U		0.02	U		0.019	U	
ACENAPHTHENE		0.019	U		0.018	U		0.02	U		0.019	U	
ACENAPHTHYLENE		0.019	U		0.018	U		0.02	U		0.019	U	
ANTHRACENE		0.019	U		0.018	U		0.02	U		0.019	U	
BENZO(A)ANTHRACENE	E	0.0036	J	Р	0.0038	J	Р	0.02	U		0.019	U	
BENZO(A)PYRENE		0.019	U		0.0034	Ĵ	Р	0.02	U		0.019	U	
BENZO(B)FLUORANTHE	ENE	0.0032	J	Р	0.0038	J	Р	0.02	U		0.0023	J	Р
BENZO(G,H,I)PERYLENI	E	0.0036	J	Р	0.0042	J	Р	0.0028	J	P	0.0034	J	Р
BENZO(K)FLUORANTHE	ENE	0.019	Ŭ		0.018	U		0.02	U		0.019	U	
CHRYSENE		0.0052	J	Р	0.018	U		0.02	U		0;0045	j	P
DIBENZO(A,H)ANTHRAC	CENE	0.019	U		0.018	U		0.02	U	_	0.019	U	
FLUORANTHENE		0.0068	J	Р	0.0061	J	P	0.02	U		0.019	U	
FLUORENE		0.019	U		0.018	U		0.02	U		0.019	U	
INDENO(1,2,3-CD)PYRE	NE	0.019	U		0.018	U		0.02	U		0.019	U	
NAPHTHALENE		0.019	U		0.018	U		0.02	U		0.019	U	
PHENANTHRENE		0.0052	J	Р	0.0053	J	P	0.02	υ		0.019	U	
PYRENE		0.008	J	P	0.008	J	Р	0.02	U		0.0057	J	P

PROJ_NO: 02435	NSAMPLE	DASB232-030	5		DASB233-030	)5		DASB234-030	5		DASB235-030	5	
SDG: 1304208	LAB_ID	1304212-06			1304212-07			1304212-08			1304212-09		
FRACTION: PAH	SAMP_DATE	4/12/2013	•		4/12/2013			4/12/2013			4/12/2013		
MEDIA: SOIL	QC_TYPE	NM			NM		<u> </u>	NM	-		NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG	_	
	PCT_SOLIDS	86.0			85.0			52.0			72.0		
	DUP_OF												
PARAMETER	· · ·	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALE	NE	0.019	U		0.02	U		0.12	J	P	0.23	U	
ACENAPHTHENE		0.019	U		0.02	บ		0.26	J	P	0.11	J	Р
ACENAPHTHYLENE		0.019	Ü		0.02	υ		0.16	J	P	0.092	J	P
ANTHRACENE		0.019	U		0.02	U		0.81			0.46		
BENZO(A)ANTHRACEN	E	0.019	U		0.011	J	Р	5.9	ر		1.5		
BENZO(A)PYRENE		0.019	U		0.011	1	Р	5.7			1.3	ļ	
BENZO(B)FLUORANTH	ENE	0.0024	J	Р	0.0097	J	Р	6.6			1.8		
BENZO(G,H,I)PERYLEN	IE	0.0051	J	Р	0.0081	J	P	2.8	-		0.87		
BENZO(K)FLUORANTH	ENE	0.019	U		0.0077	J	P	3.6			1		
CHRYSENE		0.019	Ū		0.014	J	P	5.8			1.4		
DIBENZO(A,H)ANTHRA	CENE	0.019	Ü		0.02	U		0.66			0.42		
FLUORANTHENE		0.019	U		0.015	J	Р	5			2.7		
FLUORENE		0.019	U		0.02	U		0.35			0.12	J	Р
INDENO(1,2,3-CD)PYR	ENE	0:019	Ü		0.0041	J	Р	2.7			0.82		
NAPHTHALENE		0:019	U		0.02	U		0.24	J	Р	0.23	U	
PHENANTHRENE		0.019	U		0.011	J	Р	2.4			1.7		
PYRENE		0:019	U		0.018	J	Р	9.2			2.5		

5/13/2013

PROJ_NO: 02	NSAMPLE	DASB236-030	 5		DASB237-030	5		DASBFD-04			DASBFD-05		
SDG: 1304208	LAB_ID	1304212-10			1304212-11		<u>'</u>	1304208-05			1304208-06		
					<del>                                     </del>	-		4/12/2013			4/12/2013		
FRACTION: PAH	SAMP_DATE	4/12/2013			4/12/2013								
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	86.0			81.0			88:0			87.0		
	DUP_OF							DA-SB-229-03	05		DA-SB-231-03	05	
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALENE		0.02	U		0.021	U		0.019	υ		0.019	U	
ACENAPHTHENE		0.015	J	Р	0.021	U		0.019	U		0.019	U	
ACENAPHTHYLENE		0.02	U		0.021	U		0.019	ح		0.019	υ	
ANTHRACENE		0.037			0.021	U		0.019	υ		0.019	U	
BENZO(A)ANTHRACENE		0.11			0.0058	J	Р	0.019	U		0.004	J	Р
BENZO(A)PYRENE		0.1		}	0.0037	J	P	0.019	U		0.0028	J	Р
BENZO(B)FLUORANTHEN	E	0.11			0.0058	J	Р	0.019	υ		0.0024	J	P
BENZO(G,H,I)PERYLENE		0.057			0.0025	J	P	0.0044	J	Р	0.0044	J	Р
BENZO(K)FLUORANTHEN	E	0.081			0.0025	Ĵ	P	0.019	U		0.0028	J	Р
CHRYSENE		0.11			0.0049	J	P	0.019	U	T -	0.0052	J	P
DIBENZO(A,H)ANTHRACE	NE	0.019	J	Р	0.021	U		0.019	U		0.019	U	
FLUORANTHENE		0.21			0.0099	J	Р	0.019	U		0.006	J	Р
FLUORENE		0.011	J	Р	0.021	U		0.019	U		0.019	U	
INDENO(1,2,3-CD)PYRENE	<b>=</b>	0.049			0.021	U		0.019	U		0.019	U	
NAPHTHALENE		0.02	U		0.021	U		0.019	υ		0.019	U	
PHENANTHRENE		0.12			0.0074	J	Р	0.019	U		0.019	U	
PYRENE		0.22			0.01	J	Р	0.019	U		0.0084	J	P

PROJ_NO: 02435	NSAMPLE	DASS208-000	2		DASS209-000	2		DASS210-000	2		DASS211-000	2	
SDG: 1304208	LAB_ID	1304212-01			1304212-02			1304212-03	-		1304212-04		
FRACTION: PAH	SAMP_DATE	4/12/2013		4/12/2013			4/12/2013			4/12/2013			
MEDIA: SOIL	QC_TYPE	NM			NM			NM		1 .	NM		
•	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	87.0			81.0			88.0			84.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALEN	VE	0.096	U		0:034	J	Р	0.019	U		0.099	U	
ACENAPHTHENE		0.033	J	Р	0:079			0.019	U		0.099	U	
ACENAPHTHYLENE		0.096	U		0:017	J	P	0.019	U		0.099	U	
ANTHRACENE		0.089	J	Р	0.18			0.019	U		0.099	U	
BENZO(A)ANTHRACENE		0.32			0.63			0.019	U		0.052	J	P
BENZO(A)PYRENE		0.27			0.57			0.019	U		0.068	J	Р
BENZO(B)FLUORANTHE	NE	0.32			0.65			0.019	U		0.049	J	Р
BENZO(G,H,I)PERYLEN	E	0.16			0.34			0.019	U		0.039	J	P
BENZO(K)FLUORANTHE	NE	0.14			0.38			0.019	U		0.039	J	Р
CHRYSENE		0.29			0.65			0.019	U		0.052	J	Р
DIBENZO(A,H)ANTHRAC	CENE	0.031	J	Р	0.12			0.019	Ú		0.099	U	
FLUORANTHENE		0.43			0.99			0.019	υ		0.07	J	Р
FLUORENE		0.033	J	Р	0:068			0.019	U		0.099	U	
INDENO(1,2,3-CD)PYRE	NE	0.12			0.31			0.019	U	1	0.039	J	Р
NAPHTHALENE	-	0.096	U		0.03	J	P	0.019	U	T	0.099	U	
PHENANTHRENE		0.32			0.84			0.019	U		0:049	J	Р
PYRENE		0.61			1.1			0.019	U		0.11		

PROJ_NO: 02	NSAMPLE	DASS212-000	2 ·		
SDG: 1304208	LAB_ID	1304212-05		· · · · · · · · · · · · · · · · · · ·	
FRACTION: PAH	SAMP_DATE	4/12/2013			
MEDIA: SOIL	QC_TYPE	NM	-		
	UNITS	MG/KG			
	PCT_SOLIDS	80.0			
	DUP_OF				
PARAMETER		RESULT	VQL	QLCD	
2-METHYLNAPHTHALENE	•	0.013	J	Р	
ACENAPHTHENE		0.21			
ACENAPHTHYLENE		0.013	J	P	
ANTHRACENE		0.1			
BENZO(A)ANTHRACENE		0.36			
BENZO(A)PYRENE		0.26			
BENZO(B)FLUORANTHEN	IE	0.33			
BENZO(G,H,I)PERYLENE		0.091			
BENZO(K)FLUORANTHEN	IE	0.17			
CHRYSENE		0.35			
DIBENZO(A,H)ANTHRACE	NE	0.027			
FLUORANTHENE		0.51			
FLUORENE		0.14			
INDENO(1,2,3-CD)PYREN	0.11				
NAPHTHALENE	0.024				
PHENANTHRENE	0.45				
PYRENE	0.7				



# **Tetra Tech**

# INTERNAL CORRESPONDENCE

TO:

🏮 J. LOGAN 🦸

DATE:

May 17, 2013

FROM:

**MEGAN CARSON** 

COPIES: DV FILE

SUBJECT:

INORGANIC DATA VALIDATION -ARSENIC AND LEAD

**USCG ATWATER FACILITY** 

SAMPLE DELIVERY GROUP (SDG) - 1304208

SAMPLES:

17/Soil/

 DASB228-0305
 DASB229-0305
 DASB230-0305

 DASB231-0305
 DASB232-0305
 DASB233-0305

 DASB234-0305
 DASB235-0305
 DASB236-0305

 DASB237-0305
 DASBFD-04
 DASBFD-05

 DASS208-0002
 DASS209-0002
 DASS210-0002

DASS211-0002

DASS212-0002

#### Overview

The sample set for USCG Atwater Facility, SDG 1304208 consists of seventeen (17) soil environmental samples. This SDG contained two field duplicate pairs: DASBFD-04/DASB229-0305 and DASBFD-05/DASB231-0305.

All samples were analyzed for arsenic and lead. The samples were collected by TetraTech on April 11th and 12th, 2013 and analyzed by TriMatrix Laboratories Inc. Metals analyses were conducted using method 6020A. The data contained in this SDG were validated with regard to the following parameters:

- * Data Completeness
- Holding Times
- Instrument performance and tuning
- Initial and Continuing Calibrations
- Laboratory Method Blank Analyses
- Internal Standard Recoveries
- Field Duplicate Precision
- Laboratory Control Sample Results
- Matrix Spike/ Matrix Spike Duplicate Results
- Detection Limits
- Analyte Quantitation
  - Quality control criteria were met for this parameter.

Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

# **METALS:**

All sample results were considered acceptable as all quality control criteria were met.

#### Notes:

Internal standard recoveries were not listed on a summary form. The validator verified that all recoveries met acceptance criteria (70-120%) in the raw data.

Sample results were reported on a dry weight basis.

# Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for "National Functional Guidelines for Inorganic Data Validation", October 2004, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", October 2010.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech Megan Carson

Chemist/Data Validator

Zetra Tech

Joseph A. Samchuck
Quality Assurance Officer

## Attachments:

- 1. Appendix A Qualified Analytical Results
- 2. Appendix B Results as reported by the Laboratory
- 3. Appendix C Support Documentation

# APPENDIX A

**QUALIFIED ANALYTICAL RESULTS** 

#### **Qualifier Codes:**

A = Lab Blank Contamination

B = Field Blank Contamination

C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

C01 = GC/MS Tuning Noncompliance

D = MS/MSD Recovery Noncompliance

E = LCS/LCSD Recovery Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = ICP PDS Recovery Noncompliance; MSA's r < 0.995

K = ICP Interference - includes ICS % R Noncompliance

L = Instrument Calibration Range Exceedance

M = Sample Preservation Noncompliance

N = Internal Standard Noncompliance

N01 = Internal Standard Recovery Noncompliance Dioxins

N02 = Recovery Standard Noncompliance Dioxins

N03 = Clean-up Standard Noncompliance Dioxins

O = Poor Instrument Performance (i.e., base-time drifting)

P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Other problems (can encompass a number of issues; i.e.chromatography,interferences,

Q = etc.

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = RPD between columns/detectors >40% for positive results determined via GC/HPLC

V = Non-linear calibrations; correlation coefficient r < 0.995

W = EMPC result

X = Signal to noise response drop

Y = Percent solids <30%

Z = Uncertainty at 2 sigma deviation is less than sample activity

Z1 = Tentatively Identified Compound considered presumptively present

Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02435	NSAMPLE	DASB228-030	5		DASB229-030	5		DASB230-03			DASB231-03	05	
SDG: 1304208	LAB_ID	1304208-01			1304208-02			1304208-03			1304208-04	•	
FRACTION: M	SAMP_DATE	4/11/2013			4/11/2013			4/11/2013			4/11/2013		
MEDIA: SOIL	QC_TYPE	NM ⁱ			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
•	PCT_SOLIDS	86.0			90:0			86.0			86.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		5.1			6.1			4.	3		5.	1	
LEAD		6.9			6.5			6.	9		7.	5	

PROJ_NO: 02465	NSAMPLE	DASB232-030	DASB232-0305			305		DASB234-030	05		DASB235-030	)5	
SDG: 1304208	LAB_ID	1304212-06			1304212-07			1304212-08			1304212-09		
FRACTION: M	SAMP_DATE	4/12/2013		4/12/2013			4/12/2013			4/12/2013			
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM	-	
	UNITS	MG/KG			MG/KG			MG/KG		<u>-</u>	MG/KG		
	PCT_SOLIDS	86.0			85.0			52.0			72:0		
	DUP_OF										:		
PARAMETER	<del></del>	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		6.1			5	.8		6.6	3		38	3	
LEAD		7				16		220	)		1800		

PROJ_NO: 02435	NSAMPLE	DASB236-030	5		DASB237-030	5		DASBFD-04			DASBFD-05		
SDG: 1304208	LAB_ID	1304212-10			1304212-11		_	1304208-05			1304208-06		
FRACTION: M	SAMP_DATE	4/12/2013			4/12/2013			4/12/2013			4/12/2013		
MEDIA: SOIL	QC_TYPE	NM			NM			NM	-	· · · · · · · · · · · · · · · · · · ·	NM		
	UNITS	MG/KG			MG/KG			MG/KG	,		MG/KG		
	PCT_SOLIDS	86.0	•		81.0			88.0			87.0		
	DUP_OF							DASB229-03	305		DASB231-0	305	
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		4.9			2.5			5	:6			5	
LEAD		26			31		"	7	.1		8	.2	

PROJ_NO: 02485	NSAMPLE	DASS208-000	2		DASS209-0	002		DASS210-00	002		DASS211-00	02	
SDG: 1304208	LAB_ID	1304212-01			1304212-02		-	1304212-03			1304212-04		
FRACTION: M	SAMP_DATE	4/12/2013			4/12/2013	-		4/12/2013			4/12/2013		
MEDIA: SOIL	QC_TYPE	NM:			NM			NM	_		NM		
	UNITS	MG/KG		<del></del>	MG/KG			MG/KG	-		MG/KG		
	PCT_SOLIDS	87.0			81.0			88.0			84.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		7.7				11		2.	3		5.8	В	
LEAD		340			5	10	-	2	7		4:	3	

PROJ_NO: 02435	NSAMPLE	DASS212-000	2					
SDG: 1304208	LAB_ID	1304212-05						
FRACTION: M	SAMP_DATE	4/12/2013						
MEDIA: SOIL	QC_TYPE	NM						
	UNITS	MG/KG						
	PCT_SOLIDS	80.0						
	DUP_OF							
PARAMETER		RESULT	VQL	QLCD				
ARSENIC		5.4						
LEAD	220							



# INTERNAL CORRESPONDENCE

TO:

🖟 J. LOGAN

DATE:

MAY 14, 2013

FROM:

A. COGNETTI

COPIES:

**DV FILE** 

**SUBJECT:** 

ORGANIC AND INORGANIC DATA VALIDATION - PAH / METALS / PERCENT SOLIDS

**USCG ATWATER FACILITY** 

SAMPLE DELIVERY GROUP (SDG) - 1304314

SAMPLES:

3/Soil/PAH/ Percent Solids

DASS244-0002

DASS245-0002

DASS246-0002

5/Soil/Metals

DASB-CF-1

DASB-CF-2

DASS244-0002

DASS245-0002

DASS246-0002

### **OVERVIEW**

The sample set for USCG Atwater Facility, SDG 1304314 consists of three (3) soil environmental samples analyzed for polynuclear aromatic hydrocarbons (PAHs) and percent solids. Five (5) soil environmental samples were also analyzed for the select total metals arsenic and lead. No field duplicate pair is included within this SDG.

The samples were collected by Tetra Tech on April 17, 2013 and analyzed by TriMatrix Laboratories. USEPA SW 846 Method 8270C for PAHs and 6020A for metals analytical and reporting protocols were used. The data contained in this SDG were validated with regard to the following parameters:

- Data Completeness
- Holding Times
- GC/MS Tuning
- Initial and Continuing Calibrations
- Laboratory Blank Analyses
- Surrogate Recoveries
- Laboratory Control Sample Results
  - Matrix Spike / Matrix Spike Duplicate Results
- Internal Standard Recoveries
- ICP Interference Analysis
- ICP Serial Dilution Results
- Analyte Quantitation
- Analyte Identification
- Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

#### **PAHs**

The matrix spike (MS) percent recovery (%R) of fluoranthene was less than the lower quality control limit in sample DASS244-0002. The detected result for fluoranthene was qualified as estimated (J).

TO: J. Logan FROM: A. Cognetti SDG: 1304314 DATE: May 14, 2013

PAGE 2

The matrix spike duplicate (MSD) %Rs were low in sample DASS245-0002 for anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene. In addition, the relative percent differences (RPDs) for benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene were greater than the 30% quality control limit. All of the compounds referenced above were detected in the unspiked sample. Additionally, all compounds except for anthracene and indeno(1,2,3-cd)pyrene were detected at concentrations in the unspiked sample greater than the spiked concentration. Detected results for anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene were qualified as estimated (J) in sample DASS245-0002.

The MSD %Rs of benzo(a)pyrene and benzo(b)fluoranthene were greater than the upper quality control limit in sample DASS246-0002. Detected results for benzo(a)pyrene and benzo(b)fluoranthene were qualified as estimated (J) in sample DASS246-0002.

### Additional Comments:

The following contaminants were detected in the continuing calibration blanks at the following maximum concentrations:

. <u>Analyte</u>	Maximum Concentration (mg/L)	Action Level (mg/kg)
Analyte Lead ⁽¹⁾	0.000081	0.0405
Arsenic ⁽²⁾	0.00039	0.195

- (1) Maximum concentration detected in the continuing calibration blank (CCB 3) analyzed on April 22, 2013 @ 9:19.
- (2) Maximum concentration detected in continuing calibration blank analyzed on April 22, 2013 @ 12:43.

An action level of 5X the maximum concentration has been established in order to evaluate sample data for blank contamination. Sample aliquot, percent solids and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. No action was taken because the sample results were greater than the action level.

The MSD %R of arsenic was greater than the upper quality control limit in sample DASS244-0002. The MS %R and RPD were within quality control limits. The arsenic MS/MSD %Rs and RPDs were within quality control limits in samples DASS245-0002 and DASS246-0002. No action was taken.

Samples were analyzed at a dilution in the PAH fraction resulting in elevated nondetected reporting limits.

<u>Sample</u>	Dilution Factor
DASS244-0002	20X
DASS245-0002	10X
DASS246-0002	10X

The nondetected results were reported to the laboratory reporting limit

Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

TO: J. Logan FROM: A. Cognetti SDG: 1304314 DATE: May 14, 2013

PAGE 3

# **EXECUTIVE SUMMARY**

Laboratory Performance Issues: None.

Other factors affecting data quality: MS/MSD recovery noncompliances resulted in the qualification several PAH results. Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999), EPA Functional Guidelines for Inorganic Data Review (October 2004), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (October 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech

Ann Cognetti

Chemist/Data Validator

Zetrá Tech

Joseph A. Samchuck

Data Validation Quality Assurance Officer

#### Attachments:

Appendix A - Qualified Analytical Results

Appendix B - Results as Reported by the Laboratory

Appendix C – Support Documentation

# APPENDIX A QUALIFIED ANALYTICAL RESULTS

#### **Qualifier Codes:**

A = Lab Blank Contamination

B = Field Blank Contamination

C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

C01 = GC/MS Tuning Noncompliance

D = MS/MSD Recovery Noncompliance

E = LCS/LCSD Recovery Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = ICP PDS Recovery Noncompliance; MSA's r < 0.995

K = ICP Interference - includes ICS % R Noncompliance

L = Instrument Calibration Range Exceedance

M = Sample Preservation Noncompliance

N = Internal Standard Noncompliance

N01 = Internal Standard Recovery Noncompliance Dioxins

N02 = Recovery Standard Noncompliance Dioxins

N03 = Clean-up Standard Noncompliance Dioxins

O = Poor Instrument Performance (i.e., base-time drifting)

P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = RPD between columns/detectors >40% for positive results determined via GC/HPLC

V = Non-linear calibrations; correlation coefficient r < 0.995

W = EMPC result

X = Signal to noise response drop

Y = Percent solids <30%

Z = Uncertainty at 2 standard deviations is greater than sample activity

Z1 = Tentatively Identified Compound considered presumptively present

Z2 = Tentatively Identified Compound column bleed

Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 02435	NSAMPLE	DASB-CF-01	SB-CF-01					DASS244-00	02		DASS245-00	002		
SDG: 1304314	LAB_ID_	1304314-04	4/17/2013 4/17/2013 4/17/2013		1304314-05									
FRACTION: M	SAMP_DATE	4/17/2013			4/17/2013							4/17/2013		
MEDIA: SOIL	QC_TYPE	NM				NM								
UNITS		MG/KG	MG/KG		MG/KG 100.0			MG/KG 88.0			MG/KG	MG/KG		
	PCT_SOLIDS	100.0		83.0										
•	DUP_OF	_										_	<u>-</u>	
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
ARSENIC		3.3			3.6	3		6.3	3		9	.4		
LEAD		3.4			3.6	3		430			62	:0		

PROJ_NO: 02	NSAMPLE	DASS246-000	2				
SDG: 1304314	LAB_ID	1304314-03					
FRACTION: M	SAMP_DATE	4/17/2013					
MEDIA: SOIL	QC_TYPE	NM					
	UNITS	MG/KG					
	PCT_SOLIDS	83.0					
	DUP_OF	1					
PARAMETER		RESULT	VQL	QLCD			
ARSENIC		5.6					
LEAD		52					
		•					

PROJ_NO: 02435	NSAMPLE	DASS244-000	2		DASS245-00	02		DASS246-000	DASS246-0002		
SDG: 1304314	LAB_ID	1304314-01			1304314-02			1304314-03	1304314-03		
FRACTION: MISC	SAMP_DATE	4/17/2013	/17/2013 4			4/17/2013			4/17/2013		
MEDIA: SOIL	QC_TYPE	NM	IM N			NM			NM		
	UNITS	%		%	%			%			
	PCT_SOLIDS	88.0			83.0	83.0			83.0		
	DUP_OF										
PARAMETER	•	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PERCENT SOLIDS		88			8:	3		83	B  -	ļ	

PROJ_NO: 02	NSAMPLE:	DASS244-000	2		DASS245-000	2 =	).	DASS246-000	2		
SDG: 1304314	LAB ID	1304314-01			1304314-02			1304314-03	•		
FRACTION: PAH	SAMP_DATE	4/17/2013			4/17/2013			4/17/2013			
MEDIA: SOIL	QC_TYPE	NM	NM		NM			NM			
	UNITS	MG/KG			MG/KG			MG/KG			
	PCT_SOLIDS	88.0			83.0	· · · · · · · · · · · · · · · · · · ·			83.0		
	DUP_OF				- 00.0						
PARAMETER	100101	RESULT	VQL	QLCD	RESULT	RESULT	VQL	QLCD			
2-METHYLNAPHTHALENE		0.38	U		0.2	U	-	0.2	U		
ACENAPHTHENE		0.38	U		0.084	J	Р	0:2	U		
ACENAPHTHYLENE		0.38	U	1	0.2	Ũ		0.2	U	1	
ANTHRACENE		0.38	J		0.2	J	DP	0.2	U		
BENZO(A)ANTHRACENE		0.15	J	Р	0.51	J	D	0.13	J	Р	
BENZO(A)PYRENE		0.14	J	Р	0.47	J	D	0.095	J	DP	
BENZO(B)FLUORANTHEN	IE .	0.17	J	Р	0.59	J	D	0.14	J	DP	
BENZO(G,H,I)PERYLENE		0.083	J	Р	0.14	J	Р	0.046	J	Р	
BENZO(K)FLUORANTHEN	ΙE	0.11	J	Р	0.29			0.079	J	Р	
CHRYSENE		0.15	J	Р	0.39			0.099	J	Р	
DIBENZO(A,H)ANTHRACE	NE	0.38	U		0.2	U		0.2	U	=	
FLUORANTHENE		0.26	J	DP	1	J	D	0.18	J	P	
FLUORENE		0.38	U		0.1	J	Р	0.2	U		
INDENO(1,2,3-CD)PYREN	E	0.38	U		0.22	J	D	0.13	J	Р	
NAPHTHALENE		0.38	U		0.2	U		0.2	U		
PHENANTHRENE		0.11	J	P	0.83	J	D	0.12	J	Р	
PYRENE		0.22	J	Р	0.78	J	D	0.15	J .	Р	



#### INTERNAL CORRESPONDENCE

TO:

J. LOGAN

DATE:

**MAY 14, 2013** 

FROM:

A. COGNETTI

**COPIES:** 

**DV FILE** 

SUBJECT:

ORGANIC AND INORGANIC DATA VALIDATION - PAH / METALS / PERCENT SOLIDS

**USCG ATWATER FACILITY** 

SAMPLE DELIVERY GROUP (SDG) - 1304363

SAMPLES:

1/Soil/PAH/Percent Solids

DASB-CF-04

2/Soil/Metals

DASB-CF-03

DASB-CF-04

#### **OVERVIEW**

The sample set for USCG Atwater Facility, SDG 1304363 consists of one (1) soil environmental sample analyzed for polynuclear aromatic hydrocarbons (PAHs) and percent solids. Two (2) soil environmental samples were also analyzed for the select metals arsenic and lead. No field duplicate pair is included within this SDG.

The samples were collected by Tetra Tech on April 19 and 23, 2013 and analyzed by TriMatrix Laboratories. USEPA SW 846 Method 8270C for PAHs and 6020A for metals and 3550C for percent solids analytical and reporting protocols were used. The data contained in this SDG were validated with regard to the following parameters:

- Data Completeness
- Holding Times
- GC/MS Tuning
- Initial and Continuing Calibrations
- Laboratory Blank Analyses
- Surrogate Recoveries
- Laboratory Control Sample Results
- Matrix Spike / Matrix Spike Duplicate Results
- Internal Standard Recoveries
- ICP Interference Analysis
- ICP Serial Dilution Results
- Analyte Quantitation
- Analyte Identification
- Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

TO: J. Logan FROM: A. Cognetti SDG: 1304363 DATE: May 14, 2013

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#### Additional Comments:

The following contaminant was detected in the continuing calibration blanks and method blank at the following maximum concentration:

Analyte Maximum Concentration (mg/L) Action Level (mg/kg) 0.00042 0.21

(1) Maximum concentration detected in the continuing calibration blank (CCB 3) analyzed on April 25, 2013 @ 13:41.

An action level of 5X the maximum concentration has been established in order to evaluate sample data for blank contamination. Sample aliquot, percent solids and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. No action was taken because the sample results were greater than the action level.

The nondetected results were reported to the laboratory reporting limit

Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

#### EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other factors affecting data quality: Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999), EPA Functional Guidelines for Inorganic Data Review (October 2004), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (October 2010). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech Ann Cognetti

Chemist/Data Validator

Tetra Tech

Joseph A. Samchuck

Data Validation Quality Assurance Officer

TO: J. Logan FROM: A. Cognetti SDG: 1304363

DATE: May 14, 2013

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#### Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

# APPENDIX A QUALIFIED ANALYTICAL RESULTS

#### **Qualifier Codes:**

A = Lab Blank Contamination

B = Field Blank Contamination

C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

C01 = GC/MS Tuning Noncompliance

D = MS/MSD Recovery Noncompliance

E = LCS/LCSD Recovery Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = ICP PDS Recovery Noncompliance; MSA's r < 0.995

K = ICP Interference - includes ICS % R Noncompliance

L = Instrument Calibration Range Exceedance

M = Sample Preservation Noncompliance

N = Internal Standard Noncompliance

N01 = Internal Standard Recovery Noncompliance Dioxins

N02 = Recovery Standard Noncompliance Dioxins

N03 = Clean-up Standard Noncompliance Dioxins

O = Poor Instrument Performance (i.e., base-time drifting)

P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Q = Other problems (can encompass a number of issues; i.e.chromatography, interferences, etc.)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = RPD between columns/detectors >40% for positive results determined via GC/HPLC

V = Non-linear calibrations: correlation coefficient r < 0.995

W = EMPC result

X = Signal to noise response drop

Y = Percent solids <30%

Z = Uncertainty at 2 standard deviations is greater than sample activity

Z1 = Tentatively Identified Compound considered presumptively present

Z2 = Tentatively Identified Compound column bleed

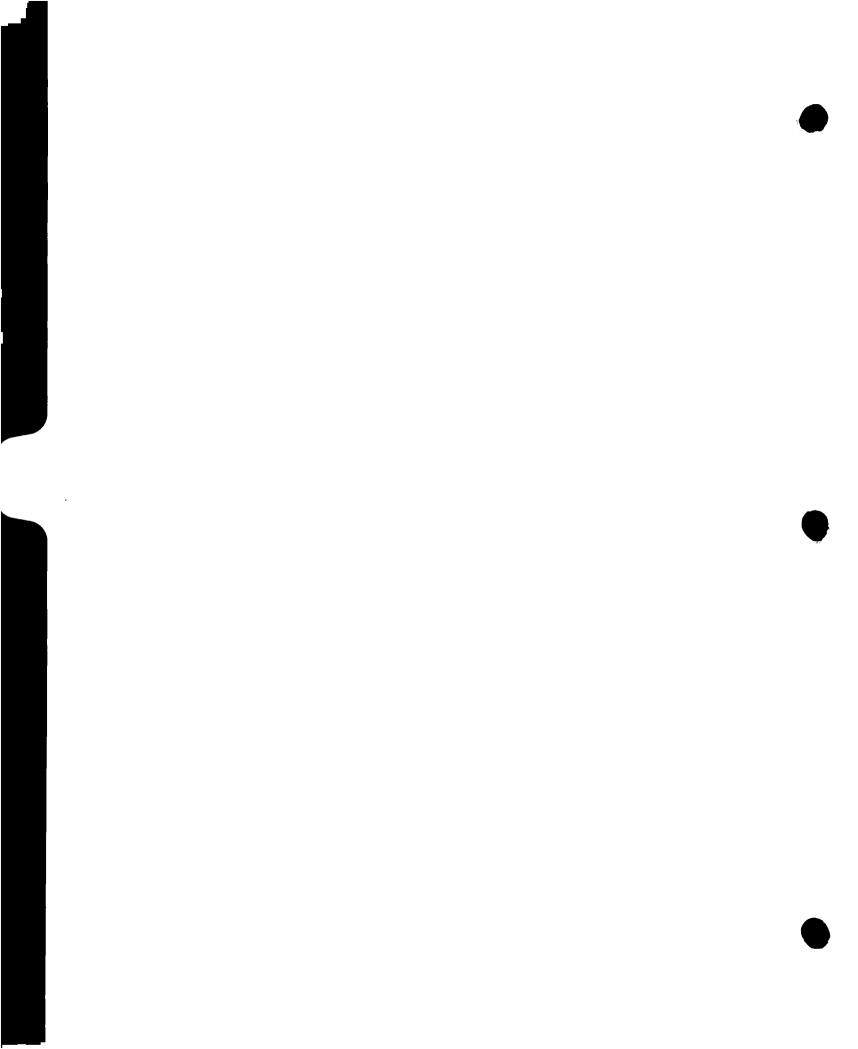
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 02	NSAMPLE	DASB-CF-03			DASB-CF-04				
SDG: 1304363	LAB_ID	1304363-01			1304363-02				
FRACTION: M	SAMP_DATE	4/19/2013			4/23/2013				
MEDIA: SOIL	QC_TYPE	NM		•	NM	NM			
	UNITS	MG/KG			MG/KG 84.0				
i	PCT_SOLIDS								
	DUP_OF								
PARAMETER		RESULT	VQL.	QLCD	RESULT	VQL	QLCD		
ARSENIC		3.3			3.2				
LEAD		3.3			12				

PROJ_NO: 02435	NSAMPLE	DASB-CF-04					
SDG: 1304363	LAB_ID	1304363-02					
FRACTION: MISC	SAMP_DATE	4/23/2013					
MEDIA: SOIL	QC_TYPE	NM					
	UNITS	%					
	PCT_SOLIDS	84.0					
	DUP_OF	<del></del>	-	<del></del>			
PARAMETER		RESULT	VQL	QLCD			
PERCENT SOLIDS		84					

PROJ_NO: 02	NSAMPLE	DASB-CF-04					
SDG: 1304363	LAB_ID	1304363-02					
FRACTION: PAH	SAMP_DATE	4/23/2013					
MEDIA: SOIL	QC_TYPE	NM					
	UNITS	MG/KG					
	PCT_SOLIDS	84.0					
<u> </u>	DUP_OF	•					
PARAMETER		RESULT	VQL	QLCD			
2-METHYLNAPHTHALEN	E	0.08	U				
ACENAPHTHENE		0.08	U				
ACENAPHTHYLENE		0.08	U				
ANTHRACENE		0.08	U				
BENZO(A)ANTHRACENE		0.067	J	Р			
BENZO(A)PYRENE	_	0.07	J	Р			
BENZO(B)FLUORANTHE	NE	0.099					
BENZO(G,H,I)PERYLENE		0.028	J	Р			
BENZO(K)FLUORANTHE	NE	0.052	J	Р			
CHRYSENE		0.07	J	Р			
DIBENZO(A,H)ANTHRACI	ENE	0.08	U				
FLUORANTHENE		0.13					
FLUORENE		0.08	U				
INDENO(1,2,3-CD)PYREN	IE	0.02	J	Р			
NAPHTHALENE		0.08					
PHENANTHRENE		0.06	J	Р			
PYRENE		0.13					

F



### Appendix F

Statistical Analysis of Data

#### Post-Remediation Exposure Point Concentration Calculation

Exposure point concentrations (EPCs) were calculated based on data for post-remediation surface soil and subsurface soil samples representing current conditions at the USCG Atwater Facility at Detroit, Michigan. Surface soil was defined as the 0-2 ft below ground surface (bgs) soil interval and subsurface soil was defined as the soil interval greater than 2 ft bgs (but above the saturated zone). The dataset evaluated is comprised of the data reported for pre-remediation soil samples and confirmation soil samples not excavated during the removal action. For purposes of human health risk assessment, an EPC is defined as the concentration in an environmental medium to which a human receptor is exposed. With the exception of lead, the EPC is typically the calculated 95 percent upper confidence limit (UCL) on the arithmetic mean. Per EPA guidance, the arithmetic mean (versus the 95% UCL) is typically used as the EPC when conducting a human health risk assessment for lead. EPCs were calculated using USEPA's ProUCL version 4.1.01 software. The sample detection limit was used as an input for non-detected results in the EPC calculations.

Arsenic, lead, and benzo(a)pyrene equivalent (BAP) concentrations were the chemicals of concern (COCs) identified in the EE/CA (Tetra Tech 2013). Two EPCs were calculated for BAPs. The BAP Equivalents POS value was calculated using positive detections only for the individual carcinogenic PAHs. The BAP Equivalents HALFND value was calculated using one half the detection limit when an individual carcinogenic PAH was reported as not detected. A list of surface and subsurface soil samples used in the calculations are provided in Table 1 and the EPCs for surface and subsurface soil are provided in Tables 2 and 3, respectively. None of the EPCs calculated for the COCs exceed remedial goals established for the removal action.

Table 1 Sample List L Concentration	Jsed in Exposure Point on Calculation
Surface Soil	Subsurface Soil
DASS101-0002	DASB010607-AVG
DASS103-0002	DASB020607
DASS106-0002	DASB101-0305
DASS108-0002	DASB103-0305
DASS201-0002	DASB104-0305
DASS202-0002	DASB104A-0204
DASS203-0002-AVG	DASB106-0305
DASS204-0002	DASB108-0305
DASS205-0002	DASB115-0305
DASS208-0002	DASB115A-0204
DASS210-0002	DASB224-0507
DASS216-0002	DASB225-0507
DASS244-0002	DASB226-0507
DASS245-0002	DASB227-0507
DASS246-0002	DASB229-0305-AVG
DASB15_01.5-03	DASB230-0305
	DASB231-0305-AVG
	DASB232-0305
	DASB233-0305
	DASB236-0305
	DASB237-0305
	DASB240-0305
	DASB241-0305-AVG
	DASB242-0305
	DASB16_04-05.5
	DASS206-0002
	DASS207-0002
	DASS211-0002
	DASS212-0002
	DASS219-0002
	DASS220-0002
	DASS221-0002
	DASS222-0002-AVG
	DASS223-0002

TABLE 2 SURFACE SOIL EXPOSURE POINT CONCENTRATIONS											
CHEMICAL	ARITHMETIC MEAN	95% UCL	MAXIMUM CONCENTRATION	EPC	EPC STATISTIC	REMEDIAL GOALS					
Arsenic	6	6.8 (NP)	9.4	6.8	95% Modified T UCL	7.6					
Lead	129	236 (G)	620	129	Arithmetic Mean	400					
BAP Equivalents HALFND	0.39	0.52 (NP)	1.05	0.52	95% KM (Chebyshev) UCL	2					
BAP Equivalents POS	0.35	0.68 (G)	1.05	0.68	95% KM (Chebyshev) UCL	2					

Units are mg/kg

TABLE 3 SUBURFACE SOIL EXPOSURE POINT CONCENTRATIONS												
CHEMICAL	ARITHMETIC MEAN	95% UCL	MAXIMUM CONCENTRATION	EPC	EPC STATISTIC	REMEDIAL GOALS						
Arsenic	6	6.9 (NP)	18	6.9	95% Student's T UCL	7.6						
Lead	93.9	139 (G)	595	93.9	Arithmetic Mean	400						
BAP Equivalents HALFND	0.64	1.7 (G)	7.9	1.7	95% KM (Chebyshev) UCL	2						
BAP Equivalents POS	0.62	1.7 (G)	7.9	1.7	95% KM (Chebyshev) UCL	2						

Units are mg/kg

# **ProUCL Surface Soil Input Files**

					BAP EQUIVALENT-	d_BAP EQUIVALENT-	BAP EQUIVALENT-	d_BAP EQUIVALENT-
Samples	ARSENIC	d_ARSENIC	LEAD	d_LEAD	HALFND	HALFND	POS	POS
DASS101-0002	5.7	'1	31	1	0.22466	1	0.22466	1
DASS103-0002	6.8	1	43	1	0.21718	1	0.21718	1
DASS106-0002	6.4	1	99	1	0.25027	1.	0.25027	1
DASS108-0002	2.5	1	11	1	0.101303	1	0.083303	1
DASS201-0002	6.7	1	66	1	0.32256	1	0.32256	1
DASS202-0002	6.3	1	39	1	0.93951	1	0.93951	1
DASS203-0002-AVG	5.25	1	29	1	0.616765	1	0.616765	1
DASS204-0002	6.2	1	40	1	0.25212	1	0.25212	1
DASS205-0002	6.1	1	21	1	1.04584	1	1.04584	1
DASS208-0002	7.7	1	340	1	0.37869	1	0.37869	1
DASS210-0002	2.3	1	2.7	1	0.019	0	0.019	0
DASS216-0002	6.8	1	180	1	0.3508	1	0.2458	1
DASS244-0002	6.3	1	430	1	0.38225	1	0.17325	1
DASS245-0002	9.4	1	620	1	0.70529	1	0.60529	1
DASS246-0002	5.6	, 1	52	1	0.235889	1	0.135889	1
DASB15_01.5-03	6.3	1	66	1	0.259114	1	0.053764	1

# ProUCL Subsurface Soil Input Files

					BAP EQUIVALENT-	d_BAP EQUIVALENT-		d_BAP EQUIVALENT-
Samples	ARSENIC	d_ARSENIC	LEAD	d_LEAD	HALFND	HALFND	POS	POS
DASB010607-AVG			9.1	1	0.172416	1	0.061416	1
DASB020607			91.1	1	0.274526	1	0.159026	1
DASB101-0305	7.6	1	180	1	0.46073	1	0.46073	1
DASB103-0305	5	1	12	1	0.030473	1	0.020973	1
DASB104-0305	6.4	1	16	1	0.040265	1	0.019365	1
DASB104A-0204					0.63346	1	0.53346	1
DASB106-0305	5.5	1	8.5	1	0:02741	1	0.00761	1
DASB108-0305	3.3	1	53	1	0.027548	1	0.017548	1
DASB115-0305	5.5	1	140	1	1.8889	1	1.8889	1
DASB115A-0204					0.97648	1	0:87648	1
DASB224-0507	5.1	1	63	1	0.046229	1	0.046229	1
DASB225-0507	2.6	1 .	31	1	0.090433	1	0.090433	1
DASB226-0507	4.2	1	35	1	0.42905	1	0.42905	1
DASB227-0507	5.9	1	72	1	0.25159	1	0.25159	1
DASB229-0305-AVG	5.85	1	6.8	1	0.014159	1	0.00416	1
DASB230-0305	4.3	1	6.9	1	0.02	0	0.02	0
DASB231-0305-AVG	5.05	1	8.35	1	0.017576	1	0.0018535	1
DASB232-0305	6.1	1	7	1	0.021244	1	0:00024	1
DASB233-0305	5.8	1	16	1	0:023571	1	0.013571	1
DASB236-0305	4.9	1	26	1	0.14682	1	0.14682	1
DASB237-0305	2.5	1	31	1	0.016439	1	0.004889	1
DASB240-0305	7.2	1	120	1	1.9302	1	1.9302	1
DASB241-0305-AVG	7.85	1	295	1	1.014695	1	1.014695	1
DASB242-0305	7	1	18	1	0.022323	1	0.022323	1
DASB16_04-05.5	7.5	1	57	1	0.35881	1	0.16186	1
DASS206-0002	8.9	1	410	1	0.39145	1	0.39145	1
DASS207-0002	6.1	1	99	1	0.28432	- 1	0.28432	1
DASS211-0002	5.8	1	43	1	0.131942	1	0.082442	1
DASS212-0002	5.4	1	220	1	0.36905	1	0.36905	1
DASS219-0002	6	1	270	1	7.873	1	7.873	1
DASS220-0002	18	1	13	1	0.37989	1	0.37989	1
DASS221-0002	5.1	1	35	1	0.14505	1	0.14505	1
DASS222-0002-AVG	5.35	1	595	1	1.48676	1	1.48676	1
DASS223-0002	4.2	1	16	1	1.8324	1	1.8324	1

## **ProUCL Surface Soil Output Files**

1	7 1 2 1 0	General UCL Statistics	for Full Data	a Sets					
	User Selected Options		_	<u></u>					
2	·	0-2wo excav_sat_proper	tv.wst						
3	Full Precision	OFF	<del></del>						
4		95%							
5	···-	<u> </u>		·					
	Number of Bootstrap Operations	2000							
7	····			<u> </u>					
8									
9 ARS	SENIC								
10									
11			General	Statistics					
12	Numb	per of Valid Observations	16	Number of Distinct Observations	13				
13	N	umber of Missing Values	9						
14	· · · · · · · · · · · · · · · · · · ·								
15	Raw St	atistics		Log-transformed Statistics					
16		Minimum	2.3	Minimum of Log Date (	0.833				
		Maximum	9.4	Maximum of Log Data 2					
17.			6.022	Mean of log Data					
18		Geometric Mean		SD of log Data (					
19		Median							
20			1.702						
21		Std. Error of Mean		<del> </del>					
22									
23		Coefficient of Variation	·						
24		Skewness	-0./91						
25									
26			Relevant U	CL Statistics					
27	<u> </u>	ribution Test		Lognormal Distribution Test					
3		hapiro Wilk Test Statistic		Shapiro Wilk Test Statistic					
29	St	napiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value (	0.887				
30	Data not Normal at 5	% Significance Level		Data not Lognormal at 5% Significance Level					
31									
32	Assuming Non	mal Distribution		Assuming Lognormal Distribution					
33		95% Student's-t UCL	6.768	95% H-UCL 7	7.325				
34	95% UCLs (Adju	sted for Skewness)		95% Chebyshev (MVUE) UCL 8	B.545				
35	95% Adjuste	d-CLT UCL (Chen-1995)	6.632	97.5% Chebyshev (MVUE) UCL 9	9.609				
_	<u></u> <u>.</u>	ed-t UCL (Johnson-1978)		99% Chebyshev (MVUE) UCL					
36	20,036116								
37	Gamma Diet	ribution Test		Data Distribution					
38		k star (bias corrected)	8 034	Data do not follow a Discernable Distribution (0.05)	<u> </u>				
39		Theta Star		Date do not ionow a Discentable Distribution (0.05)	<u>′</u>				
40									
41		MLE of Mean							
42		LE of Standard Deviation							
43		nu star							
44		e Chi Square Value (.05)		Nonparametric Statistics					
45		ted Level of Significance		95% CLT UCL 6					
46	Ad	ljusted Chi Square Value	217.1	95% Jackknife UCL 6					
47				95% Standard Bootstrap UCL 6	6.695				
48	Anders	son-Darling Test Statistic	1.629	95% Bootstrap-t UCL 6	6.67				
49	Anderson-l	Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL 6	6.682				
lo	Kolmogoro	ov-Smirnov Test Statistic	0.266	95% Percentile Bootstrap UCL 6	5.681				
-		mimov 5% Critical Value		95% BCA Bootstrap UCL 6					
51	Data not Gamma Distribute			95% Chebyshev(Mean, Sd) UCL 7					
52				97.5% Chebyshev(Mean, Sd) UCL 8					
$\neg$				37.3 % CHEDAZHEANAEAN SOLUTION					
53	Accuming Com	ma Distribution							
53 54 55	Assuming Gam		7.000	99% Chebyshev(Mean, Sd) UCL 1					

	<u> </u>	<u> </u>		
56	95% Adjusted Gamma UCL (Use when n < 40)	7.129		
57			11 0F8/ O 1 1 1101	0.700
58	Potential UCL to Use		Use 95% Student's-t UCL	
59	· <del></del>		or 95% Modified-t UCL	6.754 
60				
61		· -	ovided to help the user to select the most appropriate 95% UC	
62	· ·		mulation studies summarized in Singh, Singh, and laci (2002)	
63	and Singh and Singh (2003). For a		sight, the user may want to consult a statistician.	
64	Note: For highly		sewed data, confidence limits	
65			mal, and Gamma) may not be	
66			nnson's methods provide	
67			rely skewed data sets.	
68	Bujusune	110 101 positi	on once and one.	<u>.                                    </u>
69	<del></del>			
70	LEAD	<del>-</del>		
71		-		
72		General	Statistics	
73	Number of Valid Observations		Number of Distinct Observations	15
74	Number of Missing Values			
75		<u> </u>		
76 77	Raw Statistics		Log-transformed Statistics	
$\vdash$	Minimum	2.7	Minimum of Log Data	0.993
78	Maximum		Maximum of Log Data	
79	Mean	129.4	Mean of log Data	
80	Geometric Mean	57.37	SD of log Data	
81	Median			
82	SD	178.5		
83 84	Std. Error of Mean		<del>                                  </del>	<del></del>
85	Coefficient of Variation	1.38		
65. 86	Skewness	1.938		
87	<del></del>	<u></u>		
88	· · · · · · · · · · · · · · · · · · ·	Rélévant U	CL Statistics	
89.	Normal Distribution Test	···	Lognormal Distribution Test	
90	Shapiro Wilk Test Statistic	0.689	Shapiro Wilk Test Statistic	0.962
91	Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
92	Data not Normal at 5% Significance Level	<u> </u>	Data appear Lognormal at 5% Significance Level	
93				
94	Assuming Normal Distribution		Assuming Lognormal Distribution	
95	95% Student's-t UCL	207.6	95% H-UCL	496.1
96	95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	369.3
97	95% Adjusted-CLT UCL (Chen-1995)	225.9	97.5% Chebyshev (MVUE) UCL	470.5
98	95% Mödified-t UCL (Johnson-1978)	211.2	99% Chebyshev (MVUE) UCL	669.4
99				
100	Gamma Distribution Test		Data Distribution	
101	k star (bias corrected)	0.641	Data Follow Appr. Gamma Distribution at 5% Significance	e Level
102	Theta Star	201.7		
103	MLE of Mean	129.4		
104	MLE of Standard Deviation	161.5		
105	nu star	20.52		
106	Approximate Chi Square Value (.05)	11.23	Nonparametric Statistics	
107	Adjusted Level of Significance		95% CLT UCL	202.8
108	Adjusted Chi Square Value	10.46	95% Jackknife UCL	
109			95% Standard Bootstrap UCL	
110	Anderson-Darling Test Statistic	0.706	95% Bootstrap-t UCL	273.7

	M_   U   U   U   L		1 9 1		<u> </u>	1 ,	1 5	۱ ـ
111	Anderson-Därling 5% Critical Value	0.776			9	95% Háll's E	Bootstrap UCL	216.8
112	Kolmogorov-Smirnov Test Statistic	0.232			95%	Percentile E	3ootstrap UCL	207.9
113	Kolmogorov-Smirnov 5% Critical Value	0.223				95% BCA E	Bootstrap UCL	223.7
114	Data follow Appr. Gamma Distribution at 5% Significance	e Level			95% Ct	nebyshev(M	lean, Sd) UCL	323.9
115				•	97.5% Cł	nebyshev(M	lean, Sd) UCL	408.1
6	Assuming Gamma Distribution	•			99% Ct	nebyshev(N	lean, Sd) UCL	573.5
117	95% Approximate Gamma UCL (Use when n >= 40)	236.3						
118	95% Adjusted Gamma UCL (Use when n < 40)	253.8						
119								
120	Potential UCL to Use			l l	Use 95% A	pproximate	Gamma UCL	236.3
121					_			
22	Note: Suggestions regarding the selection of a 95%	UCL are p	provided to help th	e user to	select the	most appro	priate 95% U	CL.
123	These recommendations are based upon the res	ults of the s	simulation studies	summari	zed in Sin	gh, Singh, a	and laci (2002	)
24	and Singh and Singh (2003). For a	additional i	nsight, the user m	ay want to	o consult a	statisticia	٦.	
125								

<del> </del>	<u> </u>	General UCL Statistics	or Data Sat	s with Non-Detects	<u> </u>
1	User Selected Options	Content OCL Statistics		,	
2		-2wo excav_sat_proper	tv wet		
3		)FF	.,	· · · · · · · · · · · · · · · · · · ·	·
4		5%		<u></u>	
5		000		<del></del>	<u></u>
6	Trumbal of Bookstap Operations				<del> </del>
-7			<del></del>		
8	BAP EQUIVALENT-HALFND				
-a	DAI EGOIVALINI III			<del>-</del>	·
10		·	General	Statistics	
11		Number of Valid Data	16	Number of Detected Data	15
12	Number of	Distinct Detected Data	15	Number of Non-Detect Data	1
13	Nur	mber of Missing Values	9	Percent Non-Detects	6.25%
14	<u> </u>	<del></del>			
15 16	Raw Stat	tistics		Log-transformed Statistics	
17		Minimum Detected	0.101	Minimum Detected	-2.29
18		Maximum Detected	1.046	Maximum Detected	0.0448
19		Mean of Detected	0.419	Mean of Detected	-1.055
20	<del></del>	SD of Detected	0.28	SD of Detected	0.623
21		Minimum Non-Detect	0.019	Minimum Non-Detect	-3.963
22		Maximum Non-Detect	0.019	Maximum Non-Detect	-3.963
23	· · · · · · · · · · · · · · · · · · ·				
24					
25			UCL St	atistics	_
26	Normal Distribution Test wit	th Detected Values Onl	у	Lognormal Distribution Test with Detected Values O	nly
27	Sha	piro Wilk Test Statistic	0.822	Shapiro Wilk Test Statistic	0.939
28	5% Sha	piro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
29	Data not Normal at 5%	Significance Level		Data appear Lognormal at 5% Significance Level	
30	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			
31	Assuming Norma	al Distribution		Assuming Lognormal Distribution	
32	DL	/2 Substitution Method		DL/2 Substitution Method	
33		Mean	0.393	Mean	-1.28
34	<del></del>	. SD	0.289	SD	1.083
35		95% DL/2 (t) UCL	0.52	95% H-Stat (DL/2) UCL	1.103
36					
37	Maximum Likelihood I	Estimate(MLE) Method		Log ROS Method	
38		Mean	0.385	. Mean in Log Scale	-1.149
39		SD	0.294	SD in Log Scale	0.709
40		95% MLE (t) UCL	0.514	Mean in Original Scale	0.397
41		95% MLE (Tiku) UCL	0.512	SD in Original Scale	0.284
42				95% t UCL	0.522
43				95% Percentile Bootstrap UCL	0.516
44			· .	95% BCA Bootstrap UCL	0.536
45				95% H UCL	0.62
46					
47	Gamma Distribution Test wit		- 1	Data Distribution Test with Detected Values Only	
48		k star (bias corrected)	2.331	Data appear Gamma Distributed at 5% Significance L	evel
49		Theta Star	0.18		
50		nu star	69.94		
51					
52		A-D Test Statistic	0.672	Nonparametric Statistics	
.53		5% A-D Critical Value	0.745	Kaplan-Meier (KM) Method	
54		K-S Test Statistic	0.745	Mean	0.399
55		5% K-S Critical Value	0.223	SD	0.273

<b> </b>			9 1 1 1 N 1 N 1	0.0700
56	Data appear Gamma Distributed at 5% Significance L	.evei	SE of Mean 95% KM (t) UCL	0.0706
57	Assuming Gamma Distribution			0.523
58	Gamma ROS Statistics using Extrapolated Data	•	95% KM (z) UCL 95% KM (jackknife) UCL	0.519
. 59	Minimum	0.000001	95% KM (bootstrap t) UCL	0.579
60	Maximum	1.046	95% KM (BCA) UCL	0.578
	Mean	0.393	95% KM (Percentile Bootstrap) UCL	0.514
62	Median	0.291	95% KM (Chebyshev) UCL	0.707
63	SD	0.29	97.5% KM (Chebyshev) UCL	0.707
64	k star	0.581	99% KM (Chébyshev) UCL	1.102
65	Theta star	0.676	(0.05,2.10,)	
66	Nu star	18.58	Potential UCLs to Use	
68	AppChi2	9.812	95% KM (BCA) UCL	0.516
69	95% Gamma Approximate UCL (Use when n >= 40)	0.744	,	<del></del>
70	95% Adjusted Gamma UCL (Use when n < 40)	0.802		
71	Note: DL/2 is not a recommended method.	:		
72				
73	Note: Suggestions regarding the selection of a 95%	UCL are pro	ovided to help the user to select the most appropriate 95% UC	L
74	These recommendations are based upon the result	ts of the sim	ulation studies summarized in Singh, Maichle, and Lee (2006)	).
75	For additional insight	t, the user in	ay want to consult a statistician.	
76				
77				
78	BAP EQUIVALENT-POS			
79				
80		General	Statistics	
81	Number of Valid Data	16	Number of Detected Data	15
82	Number of Distinct Detected Data	15	Number of Non-Detect Data	1
3	Number of Missing Values	9	Percent Non-Detects	6.25%
84	Raw Statistics		Log-transformed Statistics	<del></del>
85	Minimum Detected	0.0538	Minimum Detected	-2.923
86 87	Maximum Detected	1.046	Maximum Detected	0.0448
88	Mean of Detected	0.37	Mean of Detected	-1.297
89	SD of Detected	0.3	SD of Detected	0.829
90	Minimum Non-Detect	0.019	Minimum Non-Detect	-3.963
91	Maximum Non-Detect	0.019	Maximum Non-Detect	-3.963
92				
93			· · · · · · · · · · · · · · · · · · ·	
94		UCL St	atistics	•
95	Normal Distribution Test with Detected Values Only	у	Lognormal Distribution Test with Detected Values Or	ıly
96	Shapiro Wilk Test Statistic	0.833	Shapiro Wilk Test Statistic	0.967
97	5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
98	Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
99				<del></del>
100	Assuming Normal Distribution		Assuming Lognormal Distribution	
101	DL/2 Substitution Method		DL/2 Substitution Method	
102		0.347	Mean	-1.507
103		0.304	SD	1.161
104	95% DL/2 (t) UCL	0.48	95% H-Stat (DL/2) UCL	1.055
)5				
106		<u>-</u>	Log ROS Method	<del></del>
107		0.338	Mean in Log Scale	-1.423
108		0.309	SD in Log Scale	0.947
109	OFFICE ATTEMPT OF	0.473	Mean in Original Scale	0.349
110	95% MLE (Tiku) UCL	0.469	SD in Original Scale	0.302

	. <b>л</b> , р , , р , , р , р , р , р , р , р ,		u				_ •	1	J			L 1
111										95%	UCL	0.481
112	-			95% Percentile Bootstrap UCL						UCL	0.477	
113								95%	BCA	Bootstrap	UCL	0.494
114								-		95% ⊦	IUCL	0.717
115												
116	Gamma Distribution Test with Detected Values On	ıly		Data	Distril	bution	Test	with [	Detecte	d Value	s Only	
117	k star (bias corrected)	1.49	D	ata appe	ar Ga	mma	Distr	ibuted	at 5%	Significa	ance Le	vel
118	Theta Star	0.248										
119	nu star	44.71										
120												
121	A-D Test Statistic	0.38			_	Non	·		Statisti			
122	5% A-D Critical Value	0.75						Kaplaı	n-Meie	r (KM) M	ethod	
123	K-S Test Statistic	0.75									Mean	0.35
124	5% K-S Critical Value	0.225		SD						0.291		
125	Data appear Gamma Distributed at 5% Significance L	_evel		SE of Mean						0.0754		
126				_						% KM (t)	<u>_</u>	0.482
127	Assuming Gamma Distribution		95% KM (z̄) UCL					•	0.474			
128	Gamma ROS Statistics using Extrapolated Data								-	ackknife)		0.481
129	Minimum	0.000001	·	95% KM (bootstrap t) UCL				_ 1	0.561			
130	Maximum	1.046								M (BCA)		0.468
131	Mean	0.347				959		-		ootstrap)		0.48
132	Median	0.248					_		-	ebyshev)		0.678
133	SD	0.305							•	ebyshev)	1	0.821
134	k star	0.534						99% K	M (Ch	ebyshev)	UCL	1.1
135	Theta star	0.65										
136	Nu star	17.07				Pot	_	_	to Us			
137	AppChi2	8.724						95% K	M (Ch	ebyshev)	UCL	0.678
138	95% Gamma Approximate UCL (Use when n >= 40)	0.678									:	
139	95% Adjusted Gamma UCL (Use when n < 40)	0.735					_					
140	Note: DL/2 is not a recommended method.											
141												
142	Note: Suggestions regarding the selection of a 95%						_			-		
143	These recommendations are based upon the result	ts of the sime	ulation st	udies su	mmar	ized i	in Sin	gh, Ma	ichle,	and Lee	(2006).	
144	For additional insigh	t, the user m	ay want t	o consul	t a st	atistic	ian.					
145												

## ProUCL Subsurface Soil Output Files

<u></u>	_1	<u>~ 1                                   </u>			191111	
1	Ц		General UCL Statistics f	or Full Dat	ta Sets	
2	<u>.</u>	User Selected Options				
3	<u>1</u>		greater 2 wo excav_satp	roperty.ws	t	
4	Ц	Full Precision	OFF			
15	1		95%			
ì	1	Number of Bootstrap Operations	2000		· · · · · · · · · · · · · · · · · · ·	<u></u>
7	7					
<u> </u>				·		
9	)	ARSENIC				
10	0					
1	1		·		al Statistics	
12	2		per of Valid Observations		Number of Distinct Observations	25 ⁻
1:	3	N:	umber of Missing Values	4		
14	4					
1	5	Raw St			Log-transformed Statistics	
1	6		Minimum		Minimum of Log Data	_
1	7		Maximum		Maximum of Log Data	
18	8	 	Mean		Mean of log Data	
19	9		Geometric Mean		SD of log Data	U.364
2	0		Median			_
2	1			2.69		
2	2		Std. Error of Mean			
2	3		Coefficient of Variation			
2	4		Skewness	3.122 		
2	5			<u> </u>		
2	6	No. and Sin		Relevant (	JCL Statistics	
2	7		ribution Test hapiro Wilk Test Statistic	0.707	Lognormal Distribution Test Shapiro Wilk Test Statistic	0.014
	븨		napiro Wilk Critical Value	Shapiro Wilk Critical Value		
72	╗	·	·	0.527	Data not Lognormal at 5% Significance Level	
_	의	Data not Normal at 5% Significance Level			Data not cognomial at 5 % organicance cever	_
	1	Assuming Norr	mal Distribution	<del></del>	Assuming Lognormal Distribution	
	2		95% Student's-t UCL	6 835	95% H-UCL	6.777
	3	95% UCLs (Adiu	sted for Skewness)		95% Chebyshev (MVUE) UCL	
	4		d-CLT UCL (Chen-1995)	7 107	97.5% Chebyshev (MVUE) UCL	
	5		ed-t UCL (Johnson-1978)	_	99% Chebyshev (MVUE) UCL	
3	_					
3	ヿ	Gamma Dist	ribution Test	<del></del>	Data Distribution	
	8		k star (bias corrected)	6.637	Data do not follow a Discernable Distribution (0.05	5)
3	_		Theta Star			<u>.</u>
	0		MLE of Mean			
	╗		LE of Standard Deviation			
4	2		nu star			<u> </u>
	_	Approximate	e Chi Square Value (.05)		Nonparametric Statistics	·
4	4.		ted Level of Significance		95% CLT UCL	6.808
4	$\neg$	•	ljusted Chi Square Value		95% Jackknife UCL	
4			-		95% Standard Bootstrap UCL	
4	$\neg$	Anders	son-Darling Test Statistic	1.115	95% Bootstrap-t UCL	
4	$\blacksquare$		Darling 5% Critical Value		95% Hall's Bootstrap UCL	10.82
	b		ov-Smirnov Test Statistic		95% Percentile Bootstrap UCL	6.878
5	П	Kolmogorov-S	mimov 5% Critical Value	0.16	95% BCA Bootstrap UCL	7.162
5	_	Data not Gamma Distribute	ed at 5% Significance Lev	/el	95% Chebyshev(Mean, Sd) UCL	8.141
5	_		· · ·		97.5% Chebyshev(Mean, Sd) UCL	9.067
5	$\neg$	Assuming Gam	ma Distribution	-	99% Chebyshev(Mean, Sd) UCL	10.89
5	$\neg$	95% Approximate Gamma		6.769		<del></del>
[3	J.					

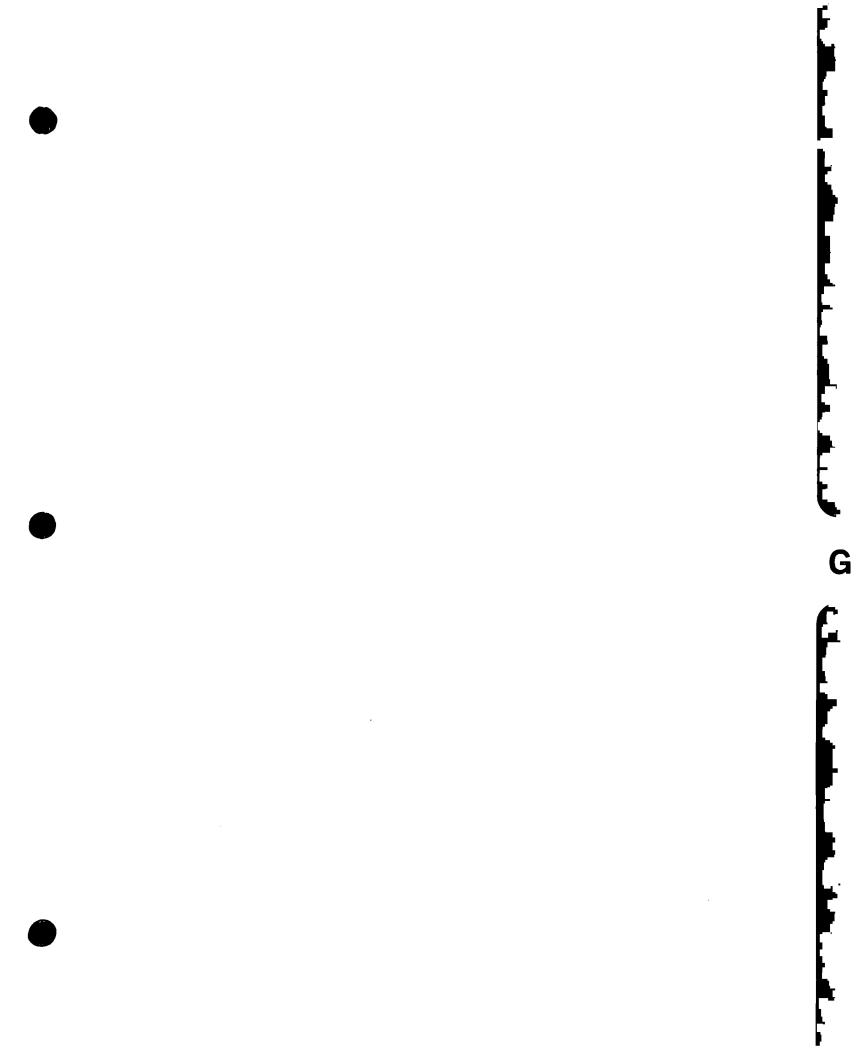
56	95% Adjusted Garma UCL (Use when n < 40)	6.817	
7		<del> </del>	
8	Potential UCL to Use		Use 95% Student's-t UCL 6.835
9			or 95% Modified-t UCL 6.881
0		- · - <del>"</del> · - <del>"</del> · - /	
1	Note: Suggestions regarding the selection of a 95%	UCL are pr	provided to help the user to select the most appropriate 95% UCL.
2	These recommendations are based upon the res	ults of the si	simulation studies summarized in Singh, Singh, and laci (2002)
3	and Singh and Singh (2003). For	additional ins	nsight, the user may want to consult a statistician.
4			
5	· · · · · · · · · · · · · · · · · · ·	<del></del>	
_	EAD		
7			
8	<u> </u>	General	l Statistics
9	Number of Valid Observations	32	Number of Distinct Observations 28
<u>,                                    </u>	Number of Missing Values	2	
1			<u></u>
<del>.</del>	Raw Statistics		Log-transformed Statistics
3	Minimum	6.8	Minimum of Log Data 1.917
4.	Maximum	595	Maximum of Log Data 6.389
5	Mean	93.87	Mean of log Data 3.721
6	Geometric Mean	41.3	SD of log Data 1.308
7	Median	35	
8	SD	134	
9	Std. Error of Mean	23.69	
٥	Coefficient of Variation	1.428	
1	Skewness	2.366	
2	191 <u></u>		
3		Relevant UC	JCL Statistics
4	Normal Distribution Test		Lognormal Distribution Test
5	Shapiro Wilk Test Statistic	0.681	Shapiro Wilk Test Statistic 0.946
6	Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value 0.93
7	Data not Normal at 5% Significance Level	1	Data appear Lognormal at 5% Significance Level
8		-	
9	Assuming Normal Distribution	-,	Assuming Lognormal Distribution
0	95% Student's-t UCL	134	95% H-UCL 188.7
1	95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL 207.6
2	95% Adjusted-CLT UCL (Chen-1995)	143.4	97.5% Chebyshev (MVUE) UCL 257.2
3	95% Modified-t UCL (Johnson-1978)		99% Chebyshev (MVUE) UCL 354.8
4		L	
5	Gamma Distribution Test		Data Distribution
6	k star (bias corrected)	0.684	Data Follow Appr. Gamma Distribution at 5% Significance Level
7	Theta Star	137.3	
8	MLE of Mean	93.87	
9 _	MLE of Standard Deviation	113.5	
00	nu stêr.	43.77	
10	Approximate Chi Square Value (.05)	29.59	Nonparametric Statistics
$\neg$	Adjusted Level of Significance		95% CLT UCL 132.8
101	Adjusted Chi Square Value	l	95% Jackknife UCL 134
_	•		95% Standard Bootstrap UCL 133.4
3			
)3 )4	Anderson-Darling Test Statistic	1.029	95% Bootstrap-t UCL 154.2
13 14 15	Anderson-Darling Test Statistic Anderson-Darling 5% Critical Value		95% Bootstrap-t UCL 154.2 95% Hall's Bootstrap UCL 157.1
)3 )4 )5	Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL 157.1
)3 )4 )5 )6	Anderson-Darling 5% Critical Value Kolmogorov-Smirnov Test Statistic	0.789 0.153	95% Hall's Bootstrap UCL 157.1 95% Percentile Bootstrap UCL 136.5
)3 )4 )5	Anderson-Darling 5% Critical Value	0.789 0.153 0.162	95% Hall's Bootstrap UCL 157.1

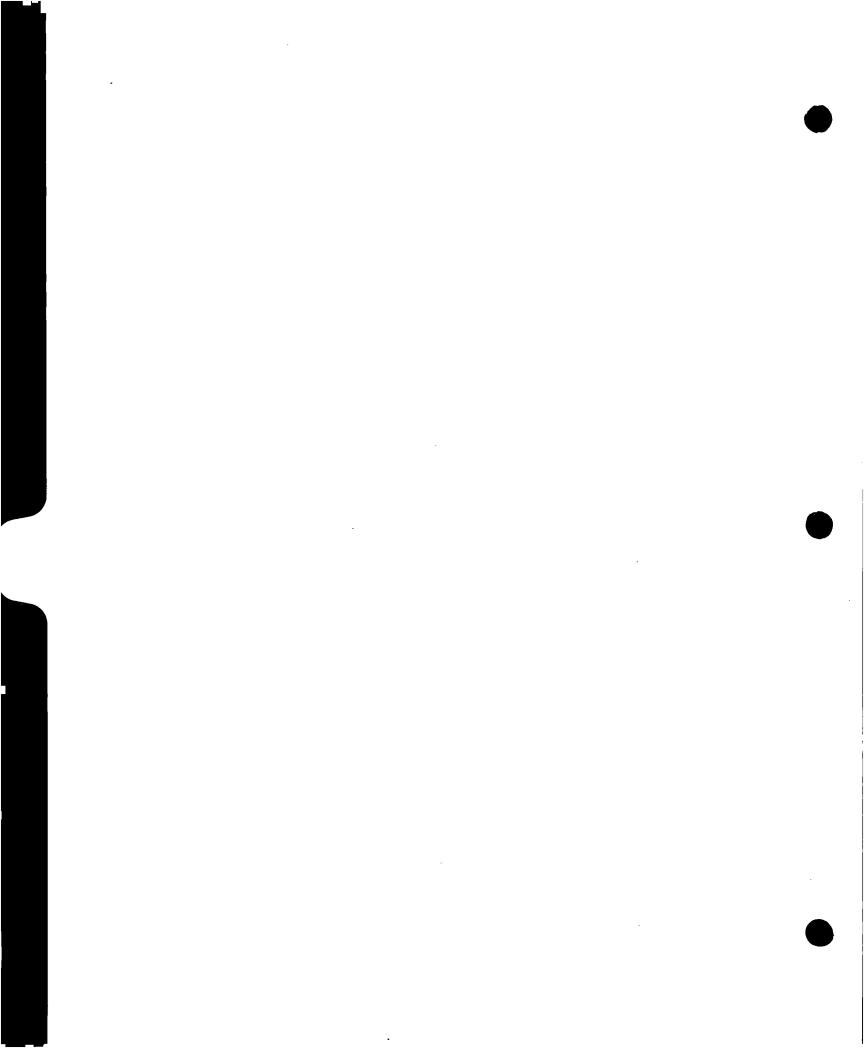
	<u> </u>	<u> </u>	,		1	ب ر	1 . N	1
111	Assuming Gamma Distribution				99% CI	ebyshev(N	fean, Sd) UCL	329.6
112	95% Approximate Gamma UCL (Use when n >= 4	0) 138.8					·	
113	95% Adjusted Gamma UCL (Use when n < 4	0) 141.8						
114							•	
115	Potential UCL to Use			Use 95% A	pproximate	e Gamma UCL	. 138.8	
6								
117	Note: Suggestions regarding the selection of a 95	5% UCL are p	rovided to he	olp the user	to select the	most appro	priate 95% U	CL.
118	These recommendations are based upon the re-	esults of the s	imulation st	udies summa	arized in Sing	gh, Singh, a	and laci (2002	2)
119	and Singh and Singh (2003). Fo	or additional ir	sight, the us	ser may wan	t to consult a	statisticia	n.	
120								

General UCL Statistics for Data Sets with Non-Detects  User Selected Options  From File greater 2 wo excav_satproperty.wst  Full Precision OFF  Confidence Coefficient 95%  Number of Bootstrap Operations 2000  7		
3 From File greater 2 wo excav_satproperty.wst 4 Full Precision OFF 5 Confidence Coefficient 95% 6 Number of Bootstrap Operations 2000		
4 Full Precision OFF 5 Confidence Coefficient 95% 6 Number of Bootstrap Operations 2000		
5 Confidence Coefficient 95% 6 Nürnber of Bootstrap Operations 2000	—	
6 Number of Bootstrap Operations 2000		
7		
8		
9 BAP EQUIVALENT-HALFND		
10 General Statistics		
	Number of Detected Data	22
Number of Distinct Detected Distinct 22	imber of Non-Detect Data	33
	Percent Non-Detects	2.94%
14	Percent Nor-Detects	2.5470
15 Räw Statistics Log-transform	med Statistics	
Nisitive Delivered 0.0142	Minimum Detected	-4,257
Movimum Date at all 7 972	Maximum Detected	2.063
Man of Detected 0 CS1	Mean of Detected	-1.709
	SD of Detected	1.701
Minimum Non Dotost 0.02	Minimum Non-Detect	-3.912
Mariner No. Delical 0.00	Maximum Non-Detect	-3.912
22	Wilder Horr-Delect	-0.512
23		
24 UCL Statistics		· <u> </u>
Aleman Distriction Tests in Description Color	st with Detected Values On	lv
Charin Mills Tan Obsticate 0 400	Shapiro Wilk Test Statistic	0.944
EV Charles Wells Cather Walne Co. 201	hapiro Wilk Critical Value	0.931
Date and Named at 50', Clariff Cone Level	at 5% Significance Level	
29 Data not Normal at 5% Significance Level Data appear Edynormal at 3% Significance Level		
	ormal Distribution	
	DL/2 Substitution Method	
33 Mean 0.642	Mean	-1.794
34 SD 1.398	SD	1.747
	95% H-Stat (DL/2) UCL	2.208
36		<del></del>
37 Maximum Likelihood Estimate(MLE) Method	Log ROS Method	·
38 Mean 0.521	Mean in Log Scale	-1.795
39 SD 1.495	SD in Log Scale	1.749
95% MLE (t) UCL 0.955	Mean in Original Scale	0.642
95% MLE (Tiku) UCL 0.927	SD in Original Scale	1.398
42	95% t UCL	1.048
	Percentile Bootstrap UCL	1.063
	95% BCA Bootstrap UCL	1.294
45	95% H UCL	2.217
46		···
	ith Detected Values Only	
k star (bias corrected) 0.467 Data Follow Appr. Gamma Distri	ribution at 5% Significance	Level
49 Theta Star 1.414	<del></del>	
50 nu star 30.84		
51		
52 A-D Test Statistic 1.066 Nonparamet		
5% A-D Critical Value 0.813 Ka	aplan-Meier (KM) Method	
K-S Test Statistic 0.813	Mean	0.642
55 5% K-S Critical Value 0.162	SD	1.377

<b>  </b>			<u> </u>	<u> </u>
56	Data follow Appr. Gamma Distribution at 5% Significance	e Level	SE of Mean	0.24 1.048
57	Assuming Gamma Distribution		95% KM (t) UCL 95% KM (z) UCL	1.048
58	Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.048
59	Minimum	0.000001	95% KM (bootstrap t) UCL	1.599
60	Maximum	7.873	95% KM (BCA) UCL	1.06
1_	Mean	0.641	95% KM (Percentile Bootstrap) UCL	1.069
62	Median	0.212	95% KM (Chebyshev) UCL	1.688
63	SD	1.398	97.5% KM (Chebyshev) UCL	2.14
64	k star	0.389	99% KM (Chebyshev) UCL	3.029
65	Theta star	1.649	00% (5.11.70.11.53) 51.50) 50.52	
66	Nu star	26.45	Potential UCLs to Use	<del></del>
67	AppChi2	15.73	95% KM (Chebyshev) UCL	1.688
68 69	95% Gamma Approximate UCL (Use when n >= 40)	1.079		
70	95% Adjusted Gamma UCL (Use when n < 40)	1.108		
71	Note: DL/2 is not a recommended method.			<del></del>
72				
73	Note: Suggestions regarding the selection of a 95%	UCL are pro	vided to help the user to select the most appropriate 95% UC	L.
74	These recommendations are based upon the result	ts of the sim	ulation studies summarized in Singh, Maichle, and Lee (2006)	•
75	For additional insight	ay want to consult a statistician.		
76				
77				
78	BAP EQUIVALENT-POS			
79				
80		General S	<del></del>	
81	Number of Valid Data		Number of Detected Data	33
82	Number of Distinct Detected Data		Number of Non-Detect Data	1
33	3		Percent Non-Detects	2.94%
84	Raw Statistics	<del></del>	Log-transformed Statistics	
85	Minimum Detected	0.00024	Minimum Detected	-8.335
86 87	Maximum Detected	7.873	Maximum Detected	2.063
88	Mean of Detected	0.637	Mean of Detected	-2.184
89	SD of Detected	1.421	SD of Detected	2.309
90	Minimum Non-Detect	0.02	Minimum Non-Detect	-3.912
91	Maximum Non-Detect	0.02	Maximum Non-Detect	-3.912
92				
93				
94		UCL St	atistics	
95	Normal Distribution Test with Detected Values Ont	у	Lognormal Distribution Test with Detected Values On	ity
96	Shapiro Wilk Test Statistic	0.464	Shapiro Wilk Test Statistic	0.969
97	5% Shapiro Wilk Critical Value	0.931	5% Shapiro Wilk Critical Value	0.931
98	Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
99			€	
100	Assuming Normal Distribution		Assuming Lognormal Distribution	
101	DL/2 Substitution Method		DL/2 Substitution Method	
102	Mean 0.6		Mean	-2.255
103	SD 1.40		SD SERVICE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE O	2.311
104	95% DL/2 (t) UCL 1.02		95% H-Stat (DL/2) UCL	8.742
05	Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
106	Maximum Likelinood Estimate(MLE) Method  Mean	0.288	Mean in Log Scale	-2.267
107	SD	1.694	SD in Log Scale	2.324
108	95% MLE (t) UCL	0.78	Mean in Original Scale	0.618
109	95% MLE (Tiku) UCL	0.787	SD in Original Scale	1.404
110	35 % WILE (TIND) DCL	U.767	35 in Original Scale	1.404

111			95% t UCL	1.026
12			95% Percentile Bootstrap UCL	1.047
113			95% BCA Bootstrap UCL	1.348
14			95% H UCL	9.072
15				
116	Gamma Distribution Test with Detected Values On	ly	Data Distribution Test with Detected Values Only	
17.	k star (bias corrected)	0.368	Data appear Gamma Distributed at 5% Significance Leve	ėl
18	Theta Star	1.73		
19	nu star	24.29		
20				
121	A-D Test Statistic	0.478	Nonparametric Statistics	
122	5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
123	K-S Test Statistic	0.837	Mean	0.618
124	5% K-S Critical Value	0.164	SD	1.383
25	Data appear Gamma Distributed at 5% Significance L	.evel	SE of Mean	0.241
26			95% KM (t) UCL	1.026
27	Assuming Gamma Distribution		95% KM (z) UCL	1.014
28	Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.026
29	Minimum	0.000001	95% KM (bootstrap t) UCL	1.655
30	Maximum	7.873	95% KM (BCA) UCL	1.096
131	Mean	0.618	95% KM (Percentile Bootstrap) UCL	1.03
132	Median	0.153	95% KM (Chebyshev) UCL	1.668
133	SD	1.404	97.5% KM (Chebyshev) UCL	2.122
134	k star	0.322	99% KM (Chebyshev) UCL	3.015
135	Theta star	1.918		
136	Nu star	21.9	Potential UCLs to Use	
137	AppChi2	12.26	95% KM (Chebyshev) UCL	1.668
138	95% Gamma Approximate UCL (Use when n >= 40)	1.103		
39	95% Adjusted Gamma UCL (Use when n < 40)	1.137		
40 Note: [	DL/2 is not a recommended method.			
41				
142			vided to help the user to select the most appropriate 95% UCL.	
143			ulation studies summarized in Singh, Maichle, and Lee (2006).	
144	For additional insigh	t, the user ma	ay want to consult a statistician.	
145				-





### Appendix G

Quarterly Groundwater Monitoring Reports

JUNE 2013 EVENT



### TETRA TECH

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PITT 08-13-002

August 19, 2013

Mr. James Cook Environmental Engineer USCG Civil Engineering Unit 1240 East Ninth St., Rm. 2179 Cleveland, OH 44199-2060

Reference:

Contract Number HSCG83-08-D-3CL109

Task Order Number HSCG83-09-J-3CL358

Subject:

Groundwater Monitoring Report (June 2013 Event) for U.S. Coast Guard Atwater

**Facility** 

Dear Mr. Cook:

Tetra Tech, Inc. (Tt) is pleased to submit this quarterly Groundwater Monitoring Letter Report for the referenced Task Order for the United States Coast Guard (USCG) Atwater Facility in Detroit, Michigan. The objective of this portion of the project includes quarterly monitoring of the groundwater associated with the Atwater Facility (Figure 1) following the removal action conducted in April 2013. The sampling is being performed according to Modification 004 of the Task Order.

Four quarterly groundwater sampling events are planned. The first event, described in this report, was performed in June 2013. Two monitoring wells that replaced two of the monitoring wells abandoned during the Removal Action were also installed in June 2013 prior to the groundwater sampling event. The next events are scheduled for September 2013, December 2013, and March 2013. Field activities and groundwater analytical results for the June 2013 event are summarized in this report. The work was performed in accordance to the Field Sampling Plan - Soil and Groundwater (Tetra Tech, 2011) and the Quality Assurance Project Plan Addendum (Tetra Tech, 2011).

#### **FIELD OPERATIONS**

### Monitoring Well Drilling and Installation

In June 2013, two permanent monitoring wells (MW01R and MW02R) were installed at the Atwater Site to investigate the first water bearing (shallow groundwater) zone. Monitoring wells were installed to replace MW01 and MW02 which were abandoned during the Removal Action in April 2013. MW03 was also abandoned, but did not need to be replaced because all previous sampling results were less than groundwater criteria.

GeoServ, Inc., under Tetra Tech's supervision, installed the two monitoring wells (MW01R and MW02R) at the site on June 11, 2013. Well construction diagrams are provided Attachment A. The monitoring wells were installed at locations shown on Figure 1. Hollow-stem auger drilling techniques were used for monitoring well installation. Each monitoring well was installed to the same depth as the original wells, 13 feet bgs. The nominal diameter of the well borings was approximately 8 inches.

Each monitoring well was constructed of 2-inch, Schedule 40 polyvinyl chloride (PVC) flush-joint riser pipe; 10-foot long flush-joint, factory-slotted, PVC well screen; and an end cap. Each section of casing

and screen was National Sanitation Foundation approved. The well screens had a slot size of 0.01 inch (10 slot) and were supplied with a flush-joint bottom cap.

After the riser pipe and screens were in place, the annular space was backfilled through the hollow-stem augers with U.S. Standard Sieve size No. 30-50 clean silica sand from the bottom of the boring to 1 foot above the top of the well screen. As the sand pack was installed, the augers were slowly retracted to provide an adequate sand pack around the well. The depths of construction materials were constantly monitored during the installation of the monitoring wells by using a weighted tape to confirm that no bridging of the annular material occurred during the installation process. A bentonite seal consisting of bentonite chips (approximately 1 foot thick) was then installed above the sand pack and allowed to hydrate in accordance with the manufacturer's recommendations.

A flush-mounted protective steel casing equipped with a sealed, bolted cap was installed over the two permanent wells. Each well riser pipe was secured with a locking J-plug. Each monitoring well was fitted with a 6-inch diameter by 10-inch long steel protective casing with an 8-inch lid. The annulus between the flush-mounted cover and the ground was filled with concrete. The soil cuttings from each monitoring well were collected in 55-gallon drums and labeled as investigation-derived waste (IDW). Disposal characterization was based on the results of previous IDW samples.

After the monitoring wells were installed, they were developed to remove fine materials (i.e., sands, silts, and clays) from the sand pack and the immediate area around the screened interval of the wells. Wells were developed by pumping using a submersible pump. During pumping, the well screens were periodically surged and the saturated screen interval was swept using the pump as a swab by pulling it up and down along the screen to remove the fine materials.

A field turbidity meter was used to measure turbidity during development. Wells were developed until a turbidity of 10 nephelometric turbidity units (NTUs) was achieved, with a minimum of 10 casing volumes purged from each well (see Attachment A). The purge water was containerized in 55-gallon drums.

The horizontal coordinates and casing elevations of the new wells were surveyed by Tetra Tech-IER.

#### **Groundwater Sampling**

Depth-to-water measurements were obtained at the three monitoring wells on June 25, 2013. Water level depths in the wells ranged from 2.63 (MW01R) to 3.58 (MW04) feet below top of casing (BTOC). The depth to the river water surface was not measured. Groundwater elevation data is provided in Table 1.

The groundwater level elevations in the three wells were lower (0.04 foot to 1.24 foot) during the June 2013 event as compared to the March 2012 event. The groundwater flow direction was toward the river.

On June 25, 2013, Tt collected groundwater samples from the three monitoring wells, MW01R, MW02R, and MW04. A duplicate sample was collected from MW01R. Samples were collected using low flow methods. Copies of the Groundwater Sample Log Sheets and Low Flow Purge Data Sheets are included in Attachment B. Following collection, the groundwater samples were shipped to Trimatrix Laboratories in Grand Rapids, Michigan for analysis of polynuclear aromatic hydrocarbons (PAHs) by EPA Method SW846 8310, and for total and dissolved Michigan 10 metals by EPA Methods 6020A and 7470A. Groundwater for dissolved metals analyses were filtered in the field using a 0.45 micron filter. Purge water was drummed and was subsequently disposed of off-site along with the soil cuttings by EarthSmart Environmental Solutions, LLC after confirming the results of the groundwater analyses (see Attachment C).

Groundwater samples were also analyzed for geochemical parameters using field kits and meters. The field kit analyses included dissolved oxygen (DO), alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate. The field meter measurements included pH and oxidation-reduction potential (ORP).

### **RESULTS**

### **Laboratory Results**

The analytical results for this event are summarized in Table 2. This table also includes the results from the previous sampling events. A copy of the laboratory reports are provided in Attachment D. The data validation report is included in Attachment E as a separate pdf.

The analytical results were not significantly different from the previous sampling events. However, unlike previous rounds, no PAHs were detected in the sample from MW02R (as compared to MW02). Similarly, PAH concentrations were less than detection limits in MW04, except for trace concentrations of two PAHs (benzo(a)anthracene and chrysene). The concentrations of PAHs in the wells were less than the Michigan Department of Environmental Quality (MDEQ) residential exposure criteria.

At MW01R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW01, except for arsenic. The total arsenic concentrations (sample and duplicate) in the sample from MW01R were 5  $\mu$ g/L and 4.9  $\mu$ g/L, respectively, and the dissolved arsenic concentrations (sample and duplicate) were 4.6  $\mu$ g/L and 5.1  $\mu$ g/L, respectively. The range of total arsenic concentrations from previous samples from MW01 was 0.6  $\mu$ g/L to 0.95  $\mu$ g/L, and the range of dissolved arsenic concentrations was 0.52  $\mu$ g/L to 1.5  $\mu$ g/L. Although the arsenic concentrations were higher for this round, they are less than the United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) of 10  $\mu$ g/L.

At MW02R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW02, except for arsenic. The total arsenic concentration in the sample from MW02R was 0.55J  $\mu$ g/L, and the dissolved arsenic concentration was 0.58J  $\mu$ g/L. The range of total arsenic concentrations from previous samples from MW02 was 1J  $\mu$ g/L to 12  $\mu$ g/L, and the range of dissolved arsenic concentrations was 6.2  $\mu$ g/L to 14  $\mu$ g/L. The arsenic concentrations were much lower for this round and are less than the USEPA MCL of 10  $\mu$ g/L.

Total metals concentrations and dissolved metals concentrations in MW04 were generally similar to the results of the last event.

#### Field Measurements

Groundwater samples were analyzed in the field using field kits and meters to evaluate the geochemistry and its effects on contaminant concentrations and the potential for biological activity. Samples were analyzed for DO, alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate with field kits, and pH and ORP were measured with field meters. These results are summarized on Table 3.

The results for MW01R suggest anaerobic biological activity. The DO was low, and the ORP was negative. The ORP result was similar to previous measurements from MW01. Alkalinity, carbon dioxide, and ferrous iron concentrations were relatively high, which are also typical of anaerobic biological activity. Sulfide was detectable. The sulfate concentrations appeared to be typical, and the pH was in the neutral range.

The results from MW02R were different from MW01R. The DO was high, and ORP was positive which are favorable to aerobic biological activity. The ORP results from previous measurements at MW02 were typically negative. The alkalinity concentration was approximately one half of the result from MW01R, and the carbon dioxide concentration was approximately one third of the result from MW01R. No ferrous iron or sulfide were detected which suggests the absence of anaerobic activity. The sulfate concentration was similar to the concentration from MW01R, and the pH was in the neutral range.

The results from MW04 had more in common with MW01R than MW02R. The DO was low, but the ORP was positive. The ORP results from previous measurements at MW03 were typically negative. The alkalinity and carbon dioxide concentrations were high, similar to MW01R, but the ferrous iron concentration was about one third of the value from MW01R. No sulfide was detected, and the sulfate concentration was greater than the concentrations in MW01R and MW02R. The pH was in the neutral

range. These results are difficult to interpret. The high ORP suggests aerobic activity, but the low DO and high ferrous iron concentration suggest anaerobic activity. The high sulfate concentration suggests either different source of fill or influence from off-site. As noted in the Removal Action Completion Report, the results of soil samples collected at the border of the site suggest that the adjacent property could be a source of contaminants.

### **CONCLUSIONS AND RECOMMENDATIONS**

Concentrations of PAHs and metals were less than USEPA and MDEQ criteria during this sampling event. PAH concentrations were less than detection limits in MW02R, although numerous individual PAHs were previously detected in samples from MW02. The high arsenic concentrations previously measured at MW02 were not observed in this event. The results of the geochemistry field measurements were inconclusive, and the results from future events may allow for better evaluation. Long-term monitoring will be continued as planned.

Should you have any questions, please contact the Project Manager, Mr. Joseph Logan at (412) 921-7231 or me at (412) 921-8415.

Very truly yours,

Roger A. Clark, Ph.D. Program Manager

RAC

CC:

file 112G02435 Joseph Logan

TABLE 1

### WATER LEVEL MEASUREMENTS **QUARTERLY MONITORING REPORT FOR JUNE 2013 EVENT USCG ATWATER FACILITY** DETROIT, MICHIGAN

	Ground	Top of	Screene	d Interval	6/6/	2011	9/14	/2011	12/1	6/2011	3/6	/2012	6/25	/2013
Well ID	Surface Elevation (feet, NAVD 88)	Top of Casing (feet, NAVD 88)	Top (feet bgs)	Bottom (feet bgs)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)
MW01	579.58	579.53	3.0	13.0	2.22	577.31	1.70	577.83	1.00	578.53	1.43	578.10	ABAN	-
MW01R	579.69	579.49	3.0	13.0		- "	-	-	_	-	-	-	2.63	576.86
MW02	579.54	579.62	3.0	13.0	3.95	575.67	3.32	576.30	3.20	576.42	3.42	576.20	ABAN	-
MW02R	579.07	578.83	3.0	13.0	-		-	-	-	-		-	2.67	576.16
MW03	579.33	579.00	3.0	13.0	3.89	575.11	3.94	575.06	4.08	574.92	4.26	574.74	ABAN	-
MW04	578.68	578.11	3.0	13.0	3.18	574.93	3.05	575.06	2.49	575.62	3.30	574.81	3.58	574.53
River Level	578.69	NA	NA	NA	3.85	574.84	4.50	574.19	4.20	574.49	4.78	573.91	NM	NM

### Notes:

bgs - below ground ABAN - Abandoned.

BTOC - below top of casing.

NA - Not Applicable. NAVD - North American Vertical Datum.

NM - Not measured.

# SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR JUNE 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN - PAGE 1 OF 3

LOCATION		Γ	T	PAGE 1 O					DAN	W01R
•	FEDERAL	Michigan	Michigan	Selected	6/6/2011		1W01 12/16/2011	3/6/2012		6/25/2013-D
SAMPLE DATE	MCL	Residential	GSI RBSL	Criteria		9/14/2011	1 '		6/25/2013	1
TOP OF SCREEN, FEET bgs	MICL	RBSL	(1)	Criteria	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		L		L	13	13	13	13	13	13
DISSOLVED METALS (UG/L)	10		10	40		T		-	· · · · · · · · · · · · · · · · · · ·	<del>                                     </del>
ARSENIC	10	10	10	10	0.95 J	0.73 J	0.36 J_	0.6 J	5	4.9
BARIUM	2000	2000	670	2000	190 J	300	260	250	300	290
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.14 J	0.2 U	0.1 U	0.1 U
CHROMIUM	100	100	100	100	0.3 J	0.27 J	1 U	1 U	0.71 U	0.86 U
COPPER	1300	1000	13	1300	0.44 J	0.61 J	0.28 J	1 U	0.73 J	0.55 J
LEAD	15	2	14	15	0.17 J	0.18 J	1 U	1 UJ	0.56 J	0.41 J
SELENIUM	50	50	5	50	5 UJ	1.1 J	5 U	5 U	1 U	1 U
ZINC	NC	2400	170	2400	5.5	6.7	6.5 U	10 U	7 J	2.9 J
METALS (UG/L)				4 5	2				and the second	,
ARSENIC	10	10	10	10	1.5 J	1 J	0.52 J	0.63 J	4.6	5.1
BARIUM	2000	2000	670	2000	210	300	260	240	290	300
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.79 J	0.06 J	0.044 J	0.04 J
CHROMIUM	100	100	100	100	0.31 J	0.25 J	0.57 J	1 U	0.54 J	0.54 J
COPPER	1300	1000	13	1300	0.74 J	0.79 J	0.98 J	1 U	0.71 J	0.81 J
LEAD	15	2	14	15	0.73 J	1	0.63 J	0.26 J	2	2.1
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	5 U	0.69 U	1 U
ZINC	NC	2400	170	2400	6.9 J	9.4	10	4 J	2.7 J	4.7 J
POLYNUCLEAR AROMATIC HYDRO	CARBONS	(UG/L)		) age		: :	Abarro	- Seena P		
2-METHYLNAPHTHALENE	NC	260	19	260	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	0.5 U	0.031 J	0.5 U	0.03 J	0.054 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U
ANTHRACENE	NC	43	iD	43	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.051 J	0.06 J	0.11 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.1 J	0.5 U	0.11 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.041 J	0.5 U	0.11 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U
FLUORENE	NC	880	12	880	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U
NAPHTHALENE	NC NC	520	11	520	0.5 U	0.5 U	0.5 U	0.04 J	0.054 U	0.05 U
PHENANTHRENE	NC NC	52	2	52	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U
FICHANIANE	NO	142		140	0.5 0	0.5 0	0.5 0	0.5 0	0.110	0.10

140

0.5 U

0.5 U

0.5 U

0.5 U

0.11 U

0.1 U

1 - For comparison only.

PYRENE

- J Estimated Concentration.
- U Below detection limit at detection limit shown.
- D Duplicate sample

Shaded cell indicates concentration greater than selected criterion.

NC

140

- bgs Below ground surface.
- GSI Groundwater-surface water interface
- ID Insufficient data to develop criterion.
- MCL Maximum Contaminant Level.
- NC No criterion.

RBSL - Risk-Based Screening Level

# SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR JUNE 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 2 OF 3

1.00.17101					GE 2 OF 3					<u>-</u>	
LOCATION		Michigan	Michigan					W02		T - : - :	DAMW02R
SAMPLE DATE	FEDERAL	Residential	GSI RBSL	Selected	6/6/2011	9/14/2011	12/16/2011	12/16/2011-	3/6/2012	3/6/2012-D	6/25/2013
TOP OF SCREEN, FEET bgs	MCL	RBSL	(1)	Criteria	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs			(-)		13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)			_				200				
ARSENIC	10	10	10	10	1 J	9	9.3	9.2	12	12	0.55 J
BARIUM	2000	2000	670	2000	200 J	150	110	100	87	89	100
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.058 J	0.046 J	0.2 U	0.2 U	0.1 U
CHROMIUM	100	100	100	100	0.47 J	0.45 J	0.36 J	0.37 J	1 U	1 U	0.79 U
COPPER	1300	1000	13	1300	0.42 J	0.16 J	1 U	0.28 J	1 U	1 U	1.3
LEAD	15	2	14	15	0.2 J	1 U	1 U	1 U_	1 UJ	1 UJ	0.5 U
SELENIUM	50	50	5	50	5 UJ	5 <u>UJ</u>	5 U	5 U	0.39 J	1.3 J	1.4 U
ZINC	NC	2400	170	2400	5 U	5 U	6.9 U	7.8 U	10 U	10 U	3.7 J
METALS (UG/L)				-		, property					
ARSENIC	10	10	10	10	6.2	12 - 12.	9.5	10	14	14	0.58 J
BARIUM	2000	2000	670	2000	150	160	110	110	86	84	110
CADMIUM	5	5	2.5	5	0.2 ป	0.2 U	0.73 J	0.054 J	0.1 J	0.11 J	0.042 J
CHROMIUM	100	100	100	100	0.33 J	0.51 J	0.39 J	0.38 J	1 U	1.3 U	0.98 J
COPPER	1300	1000	13	1300	1.2	0.29 J	0.19 J	0.39 J	1 U	1 U	1.3
LEAD	15	2	14	15	0.85 J	0.39 J	0.16 J	0.23 J	1 U	1 U	0.5 U
SELENIUM	50	50	5	50	1 J	1.5 J	5 U	5 U	5 U	0.55 J	1 U
ZINC	NC	2400	170	2400	3.9 J	6.4	8.6	10	7.6 J	3.2 J	2.8 J
POLYNUCLEAR AROMATIC HYDRO	CARBONS										
2-METHYLNAPHTHALENE	NC _	260	19	260	24 J	43	42	33	50	49	0.05 U
ACENAPHTHENE	NC _	1300	38	1300	6 J	14	10	7.7 J	6.9	6.6	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	1.7 J	3.8 J	3.7 J	2.6 J	3.9 J	3.7 J	0.05 U
ANTHRACENE	NC _	43	ID	43	3.8 J	4.8 J	3.1 J	2.2 J	6.3	4.6 J	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.28 J	1.3 J	1.2 J	10 U	0.92 J	0.72 J	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 UJ	1 J	10 U	10 U	5 U	5 U	0.1 U
BENZO(B)FLUORANTHENE	NC _	1.5	ID	1.5	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.05 J	12 U	10 U	10 U	0.41 J	5 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.1 J	12 U	10 U	10 U	5 U	5 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U
FLUORANTHENE	NC _	210	1.6	210	0.52 J	1.5 J	1 J	0.81 J	0.92 J	0.82 J	0.1 U
FLUORENE	NC	880	12	880	3.5 J	13	24	19	21	21	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U
NAPHTHALENE	NC	520	11	520	120	170	170	130	180	180	0.05 U
PHENANTHRENE	NC	52	2	52	8.8 J	11 J	11	8.3 J	12	12	0.1 U
PYRENE	NC	140	ID	140	0.39 J	1.5 J	1 J	10 U	0.92 J	0.82 J	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

RBSL - Risk-Based Screening Level

# SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR JUNE 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 3 OF 3

LOCATION	<del></del>			<u> </u>			GE 3 OF 3	IW03	-			<del></del>	DAMW04		
SAMPLE DATE	FEDERAL	Michigan	Michigan	Selected	6/6/2011	6/6/2011-D	9/14/2011	9/14/2011-D	12/16/2011	3/6/2012	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3	3	3/14/2011	3	3/0/2012	3
BOTTOM OF SCREEN, FEET bgs	"""	RBSL	(1)	·	13	13	13	13	13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)				L	10		10	1 10	<u>                                     </u>		19	19	13	13	19
ARSENIC	10	10	10	10	2.7 J	2.7 J	4.3 J	4.1 J	1.3 J	0.71 J	3 J	3.6 J	1.2 J	0.84 J	1.9
BARIUM	2000	2000	670	2000	310 J	300 J	370	360	310	270	150 J	210	130	130	190
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 J	0.31
CHROMIUM	100	100	100	100	0.21 J	1 U	0.22 J	0.23 J	1 U	1 U	1 U	1 U	0.23 J	1 U	0.83 U
COPPER	1300	1000	13	1300	1 U	1 U	1 U	0.15 J	0.25 J	1 U	0.88 J	0.6 J	0.32 J	1 U	1.9
LEAD	15	2	14	15	1 U	1 U	1 U	1 U	1 U	1 UJ	0.44 J	0.45 J	0.17 J	2.8 J	3
SELENIUM	50	50	5	50	5 UJ	5 UJ	0.97 J	0.96 J	5 U	5 U	5 UJ	5 UJ	5 U	0.73 J	2.6
ZINC	NC	2400	170	2400	4.2 J	3.9 J	5.5	5 U	7.7 U	10 U	110	100	100	140	180
METALS (UG/L)					, tradecio	\$ 9 9 6			11 11 11 11 11 11 11 11 11 11 11 11 11	***	V-C woo	· ven.		!	
ARSENIC	10	10	10	10	2.6 J	2.5 J	4.8 J	4.4 J	1.3 J	0.75 J	3 J	3.8 J	1.1 J	0.87 J	1.4
BARIUM	2000	2000	670	2000	290	290	370	340	300	270	150	210	130	130	190
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.37 U	1.1 J	0.051 J	0.2 U	0.2 U	0.2 U	0.091 J	0.25	0.34
CHROMIUM	100	100	100	100	0.29 J	0.27 J	0.24 J	0.24 J	0.22 J	1 U	0.36 J	1_U	1 U	1 U	0.71 J
COPPER	1300	1000	13	1300	0.77 J	1 U	0.3 J	0.37 J	0.39 J	1 U	2.6	1.8_	0.64 J	1 U	1.4
LEAD	15	2	14	15	0.47 J	0.33 J	0.7 J	0.57 J	1.2	0.18 J	2.1	3.3	1.8	2.8	3.8
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U	5 UJ	5 UJ	5 U	0.79 J	4.9
ZINC	NC	2400	170	2400	8.5 J	4.6 J	10	8.4	8.4_	2 J	110 J	120	110	150	190
POLYNUCLEAR AROMATIC HYDRO					<u> </u>	i	-	<u> </u>			1) TV	***************************************			
2-METHYLNAPHTHALENE	NC	260	19	260	0.07 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	1.6	1.6	2.6	2.9	1.5	1.6	0.05 J	0.03 J	0.5 U	0.5 U	0.05 U
ACENAPHTHYLENE	NC	52	ID _	52	0.05 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U
ANTHRACENE	NC	43	ID	43	0.22 J	0.19 J	0.23 J	0.23 J	0.092 J	0.13 J	0.5 U	0.5 _. U	0.5 U	0.5 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.5 U_	0.5 U	0.072 J	0.051 J	0.041 J	0.051 J	0.5 U	0.5 U	0.19 J	0.5 U	0.062 J
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.052 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.082 J	0.5 U	0.5 U	0.27 J	0.5 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	0.052 J
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.2 J	0.15 J	0.27 J	0.23 J	0.11 J	0.11 J	0.5 U	0.5 U	0.04 J	0.5 U	0.1 U
FLUORENE	NC	880	12	880	0.36 J	0.27 J	0.19 J	0.28 J	0.13 J	0.13 J	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID 11	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.14 J	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U
NAPHTHALENE	NC	520	11	520	0.19 J	0.11 J	0.062 J	0.5 U	0.5 U	0.5 U	0.05 J	0.5 U	0.5 U	0.5 U	0.05 U
PHENANTHRENE	NC	52	2	52	1.2	1	1.4	1.5	0.6	0.67	0.05 J	0.5 U	0.5 U	0.5 U	0.1 U
PYRENE	NC	140	ID	140	0.15 J	0.13 J	0.23 J	0.24 J	0.1 J	0.082 J	0.04 J	0.5 U	0.061 J	0.5 U	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

RBSL - Risk-Based Screening Level

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

## SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR JUNE 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 1 OF 3

LOCATION		DA	MW01		DAMW01R
SAMPLE DATE	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013
Appearance	clear	clear	clear	clear	clear
Purge Meter Measurements	<u> </u>				
pH (SÜ)	6.8	6.5	6.8	7.0	7.0
Specific Conductivity (mS/cm)	0.992	1.04	1.08	1.02	0.922
Temperature (°C)	18.4	20.3	9.5	7.0	19.3
Turbidity (NTU)	0.0	0.0	8.8	5.1	7.4
Dissolved Oxygen (mg/L)	0.0	0.26	0.0	2.08	0.38
ORP (mV)	-176	-158	-204	-98	-84
Field Test Kits					
Dissolved Oxygen (mg/L)	· NM	NM	NM	NM	0.9
Alkalinity (ppm)	NM	NM	NM	NM	375
Carbon Dioxide (ppm)	NM	NM	NM	NM	75
Ferrous Iron (ppm)	NM	NM	NM	NM	1.4
Sulfide (ppm)	. NM	NM	NM	NM	0.05
Sulfate (ppm)	NM	NM	NM	NM	51

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

TABLE 3

## SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR JUNE 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 2 OF 3

LOCATION		DA	MW02		DAMW02R
SAMPLE DATE	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013
Appearance	clear	clear	clear	clear	clear
				w/black	
				specks	
Purge Meter Measurements					
pH (SU)	7.7	7.3	7.6	8.1	7.3
Specific Conductivity (mS/cm)	1.49	1.38	1.48	1.27	0.554
Temperature (°C)	12.5	19.0	10.4	8.8	20.1
Turbidity (NTU)	0.0	1.7	1.2	1.5	3.2
Dissolved Oxygen (mg/L)	0.0	0.37	0.0	1.55	1.51
ORP (mV)	-192	-297	-294	-255	43
Field Test Kits		_			
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	2.7
Alkalinity (ppm)	NM	NM	NM	NM	180
Carbon Dioxide (ppm)	ŇM	NM	NM	NM	26
Ferrous Iron (ppm)	NM	NM	NM	NM	0
Sulfide (ppm)	NM	NM	NM	l.	
Sulfate (ppm)	NM	NM	NM	NM	31

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

# SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR JUNE 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 3 OF 3

LOCATION		DA	MW03				DAMW04		
SAMPLÉ DATE	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013
Appearance	clear	clear	clear	clear	clear	clear	clear	clear	clear
Purge Meter Measurements	L					I			
pH (SU)	7.2	6.7	6.5	7.2	7.3	6.7	6.7	7.1	6.9
Specific Conductivity (mS/cm)	0.925	0.99	1.06	0.992	0.694	0.863	0.71	0.664	0.772
Temperature (°C)	12.5	21.8	10.6	8.8	16.1	22.8	11.0	8.4	16.7
Turbidity (NTU)	0.7	1.3	4.5	0.5	1.7	0.0	3.6	0	0
Dissolved Oxygen (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.48
ORP (mV)	-107	-92	-74	-123	-53	-21	-24	-15	64
Field Test Kits		•					i		
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	NM	NM	NM	NM	1
Alkalinity (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	400
Carbon Dioxide (ppm)	. NM	NM	NM	NM	, NM	NM	NM	NM	60
Ferrous Iron (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	0.4
Sulfide (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	0
Sulfate (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	>80

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

FIGURE



ATTACHMENT A
MONITORING WELL INSTALLATION FIELD FORMS

MW-01R	



## OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

		1 Vertin
PROJECT USCG Detroit Atwater	LOCATION Detroit	DRILLER J. Vertin
PROJECT NO. 112G02435	BORING MW01	_ DRILLING HSA
DATE BEGUN 6/11/13	DATE COMPLETED 6/11/13	-
FIELD GEOLOGIST S. Hill GROUND ELEVATION 579.69	DATUM NAVD 88	DEVELOPMENT METHOD Surge/Purge
GROOM ELLVATION STORES		_ MC(1100
	ELEVATION TOP OF RISER:	579.49
	TYPE OF SURFACE SEAL: C	oncrete .
FLUSH MOUNT— SURFACE CASING	TYPE OF PROTECTIVE CASING	Stainless Steel
WITH LOCK	I.D. OF PROTECTIVE CASING:	8"
	DIAMETER OF HOLE: 8 1/4"	<del></del>
	TYPE OF RISER PIPE: PVC	<del> </del>
	RISER PIPE I.D.: 2"	······································
	TYPE OF BACKFILL/SEAL: N/A	<u> </u>
		1
	ELEVATION/DEPTH TOP OF SE	EAL: <u>578.69</u> / 1
	TYPE OF SEAL: Bentonite Pel	lets
		<del></del> ;
		1. ·
	ELEVATION/DEPTH TOP OF SA	AND: <u>577.69/ 2</u>
	ELEVATION/DEPTH TOP OF SO	CREEN: 576.69, 3
	TYPE OF SCREEN: PVC	
	SLOT SIZE x LENGTH: 0.010 x	10 feet
	TYPE OF SAND PACK: 10/20	<del></del>
	/   <del></del>	
	DIAMETER OF HOLE IN BEDRO	OCK: N/A
	ELEVATION / DEPTH BOTTOM	OF SCREEN: 566.69/ 13
	ELEVATION / DEPTH BOTTOM	40
	ELEVATION/DEPTH BOTTOM O	
	BACKELL MATERIAL RELOWS	

WELL NO.:	MW-02R
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## OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

	PROJECT USCG Detroit Atwater	LOCATION Detroit	DRILLER J. Vertin
	PROJECT NO. 112G02435	BORING MW02	DRILLING HSA
	DATE BEGUN 6/11/13 FIELD GEOLOGIST S. Hill	DATE COMPLETED 6/11/13	METROD
	GROUND ELEVATION 579.07	DATUM NAVD 88	_ DEVELOPMENT METHOD Surge/Purge
Z		ELEVATION TOP OF RISER:	578.83
-M.dwg 07/20/99		TYPE OF SURFACE SEAL:  TYPE OF PROTECTIVE CASING	
ACAD: FORM_MWFM.dwg	FLUSH MOUNT— SURFACE CASING WITH LOCK	I.D. OF PROTECTIVE CASING:	
ACAD:		DIAMETER OF HOLE: 8 1/4"	<del></del>
		TYPE OF RISER PIPE: PVC	
		RISER PIPE I.D.: 2"	
		TYPE OF BACKFILL/SEAL: N/A	
		ELEVATION/DEPTH TOP OF SE	AL:578.07/_ 1
		TYPE OF SEAL: Bentonite Pell	ets
		ELEVATION/DEPTH TOP OF SA	ND: <u>577.07/ 2</u>
		ELEVATION/DEPTH TOP OF SO	REEN: 576.07, 3
		TYPE OF SCREEN: PVC	
		SLOT SIZE x LENGTH: 0.010 x	10 feet
		TYPE OF SAND PACK: 10/20	· 
		DIAMETER OF HOLE IN BEDRO	CK: N/A
		ELEVATION / DEPTH BOTTOM	
		ELEVATION / DEPTH BOTTOM	
		ELEVATION/DEPTH BOTTOM OF	HOLE:
		BACKFILL MATERIAL BELOW S.	AND: N/A

Tt	Tetra Tech

### MONITORING WELL DEVELOPMENT RECORD

Page _____ of _____

Well: MWOLR	Depth to Bottom (ft.): 13	Responsible Personnel: S-Hill
Site: USCG, Aturater	Static Water Level Before (ft.): ~2.4'	Drilling Co.: GeoScr
Date Installed: 4 1\ 13	Static Water Level After (ft.):	Project Name: HTW NT -
Date Developed: (4)2/13	Screen Length (ft.): 101	Project Number: 112 G O 2 4 3 5
Dev. Method: Surte / purp	Specific Capacity:	
Pump Type: Whole	Casing ID (in.): 211	_

Time	Estimated Sediment Thickness	Cumulative Water Volume	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	рН	Specific Conductance (Units)	Turbidity (NTU)	Remarks (odor, color, etc.)
1015	(Ft.)	(Gal.)				<u> </u>		0
0915	~0.1		/ /		,			Cray thick
0927	well.	dries ou	+ ~ 15 g	us remove	2			Sweep screen
2935-	37 pm	~ 10	gals very	turbil '	5/11/			
0949-	51		~5'bas		vose a	rgain ~ 8	cials pro	turbid
1000 - 10	20,3		-6.7'bas			IS Still to		tin to clean up a bit
1010-	ø13	ļ	~6.95 bas	pure ~	6.70	sals remon		Starting to Clar
-	1022		~6.8°	~ 5 gals 1	τ.Μ0»τ	) startaz		lar
1194-1	25		~4.9	I > 11 1	e/Verc	I, V	1137	Cloudy
1045 -			~7.0	1 (1	amo		808	Cloudy reduce purposate
1058 -			-7.0	.3<			89	developed
				~ Hagal	TO N	oved in	tot	a l
				15.00	- 07			
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				· · · · · · · · · · · · · · · · · · ·				
			·	<u> </u>			<u> </u>	<del>                                     </del>
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### MONITORING WELL DEVELOPMENT RECORD

Page ___ of ____

Well: WWOZR	Depth to Bottom (ft.): 13	Responsible Personnel: 50 Hill
Site: Atwater,		Drilling Co.: GRESTYPE
Date installed: <u>6/11/13</u>	Static Water Level After (ft.):	Project Name: Ht water
Date Developed: (4)13	Screen Length (ft.): /o'	Project Number: 1126 02435
Dev. Method: Surve purge	Specific Capacity: 1.0 99 lons	<del>-</del>
Pump Type:	Casing ID (in.): 2"	_

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	рН	Specific Conductance (Units)	Turbidity (NTU)	Remarks (odor, color, etc.)	
1130-11 1130-11	24	Nagal	26.8		hy		829 59.G 29.2	turbed to Start then Cloudy - Sweep Screen	Statts of Clear
	504	~ 2 gall	rle.8 ns total	projedy			27. 8	Clear	
									-

ATTACHMENT B
SAMPLING FIELD FORMS

### **GROUNDWATER SAMPLE LOG SHEET**



Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.:

112G02435

CoIs IF											
Sample II		DA-MW01		<u>.</u>		Sampled		PRY RO			
QA/QC DI	uplicate ID:	DA F	D-06	Sample D	ate: C	6-25-	13				
MS/MSD	Collected:	YES	NO			Sample T		1340			
WELLINE	DRMATION:	Man d							CL ARK	事"和"多众事	置指計劃
Well ID:	MW01R					Purge Da	te: C	6.25-	3		
	neter (in):	2"				Static Wa	ter Level (f	t-BTOR):	2 63		
	reen (ft-BTC		3'				tor Reading		IA		
	f Screen (ft-		13			Purge Me	thod: P2	RIStalt.	ic Pumi	P	
Total Wel	l Depth (ft-E	STOR):	13'			Sample M	lethod: Pz	RISTALL	C Punt	0	
EQUIPMEN	IT INFORM	ATION:	1 Miles 2 1	A THE	1 高級	神理证明	L. HE	的"人"			和推進
Water Qu	ality Instrun	nent: Hor	IBA U.	52 (46	3854x)	Pump Co	ntroller:	GEC Pur	19	<u> </u>	
Turbidity		ie	/•		l+						
PURGE DA	NTA: THE			<b>建筑建筑</b>		の理論と		N PROFESSION	企业分配	巡修徒	等的特殊
Time (Hrs)	H ² 0 Level (ft-BTOR)	Flow mL/min.	Color	<b>pH</b> (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or opt)	Other
1242	2.63	0	51 Claudy			-					STACT
1252	288	200	CLUUDY	6.48	0.890	0.88	935	16.80	-57	0.4	2000m
1302	2.92	200	CLEAR	6.97	0.915	0.67	41.6	1783	-71	0.4	4000
1312	2.95	200	ie	6.28	0 909	0.49	15.8	18.77	- 78	0.4	6000
1322	2.98	200	Lr .	6.99	0.921	0.40	11.5	18.96	-82	0.4	8000
1332	3.01	200	ч	7.00	0.922	0. 39	9.9	19.26	- 84		10000
<u>/337</u>	3.04	200	11	7.00	0.922	0.38	7.4	19.27	- 84	0.5	11000
1340		-				_					SAMPLE
,							<b> </b>	ļ			L
				i				l·	ľ	l I	1 ·
							<del> </del>				
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										Sallaba	
Start	End	Total	Total Vol.	рН	s.c.	DO	Turbidity	Temp.	ORP	Salinity	Other
Start Purge	End Purge	Total (min.)			<del> </del>		Turbidity (NTU)	Temp. (C°)			
Start Purge 1242	End Purge /337	Total (min.) 55	Total Vol. (gal.(L.)	pH (S.U.) 7.00	s.c. (mS/cm) 0.922	DO (mg/L) 0.38	Turbidity (NTU)	Temp.	ORP (mV) -84	Sailnity (% of ppt))	Other
Start Purge 1242 ANALYSIS	End Purge /337	Total (min.) 55	Total Vol. (gal.(L.)	pH (S.U.) 7.00	S.C. (mS/cm)	DO (mg/L) の.38	Turbidity (NTU)	Temp. (C°)	ORP (mV) -84	Sailnity (% of ppt)) O。5	Other
Start Purge 1242 ANALYSIS Ana	End Purge /337 PRESERV	Total (min.) 55 AHON AND	Total Vol. (gal. (L.))	pH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS	DO (mg/L) の.38	Turbidity (NTU) 7. 4	Temp. (C°) /9. 2 7	ORP (mV) -84 Bottle 1	Sailnity (% of ppt)) O。5	Other
Start Purge 1242 ANALYSIS Ana	End Purge /337 PRESERV lyels	Total (min.) 55 AHON AND	Total Vol. (gal.(L)) I I BOTTER	pH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen	DO (mg/L) 0.38	Turbidity (NTU) 7. 4 Number	Temp. (C°) /9.27 Vol.	ORP (mV) -84 Bottle 1	Salinity (% of ppt)) の、5 製作学学師	Other II L 對望這
Start Purge /242 ANALYSIS Ana PA	End Purge /337 PRESERV lyels	Total (min.) 55 MHON AND	Total Vol. (gal.(L)) I I BOTTER	PH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen 4°	DO (mg/L) 0.38 vative	Turbidity (NTU) 7. 4 Number	Temp. (C°) /9.27 Vol. 1 L	ORP (mV) - 84 Bottle 1 Ambe	Salinity (% of ppt) O. 5 Figure 1975 Type r Glass	Other II L 赞望近 Collected
Start Purge /242 ANALYSIS Ana PA	End Purge /337 PRESERV lysis \Hs Metals	Total (min.) 55 MHON AND 526	Total Vol. (gal. (L.)  11  BOILLE R Method  LAB	PH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen 4°	DO (mg/L)  0.38  vative  C	Number	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml	ORP (mV) - 84 Bottle 1 Ambe	Salinity (% of ppt) O 5 Fype r Glass	Other II L 赞述 Collected
Start Purge /242 ANALYSIS Ana PA	End Purge /337 PRESERV lysis \Hs Metals	Total (min.) 55 MHON AND 526	Total Vol. (gal. (L.)  11  BOILLE R Method  LAB	PH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen 4°	DO (mg/L)  0.38  vative  C	Number	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml	ORP (mV) - 84 Bottle 1 Ambe	Salinity (% of ppt) O 5 Fype r Glass	Other II L 赞述 Collected
Start Purge /242 ANALYSIS Ana PA	End Purge /337 PRESERV lysis \Hs Metals	Total (min.) 55 MHON AND 526	Total Vol. (gal. (L.)  11  BOILLE R Method  LAB	PH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen 4°	DO (mg/L)  0.38  vative  C	Number	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml	ORP (mV) - 84 Bottle 1 Ambe	Salinity (% of ppt) O 5 Fype r Glass	Other II L 赞述 Collected
Start Purge /242 ANALYSIS Ana PA	End Purge /337 PRESERV lysis \Hs Metals	Total (min.) 55 MHON AND 526	Total Vol. (gal. (L.)  11  BOILLE R Method  LAB	PH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen 4°	DO (mg/L)  0.38  vative  C	Number	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml	ORP (mV) - 84 Bottle 1 Ambe	Salinity (% of ppt) O 5 Fype r Glass	Other II L 赞意
Start Purge 1242 ANALYSIS Ana PA Total	End Purge /337 PRESERV lysis \Hs Metals	Total (min.) 55 MHON AND 526	Total Vol. (gal. (L.)  11  BOILLE R Method  LAB	PH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen 4°	DO (mg/L)  0.38  vative  C	Number	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml	ORP (mV) - 84 Bottle 1 Ambe	Salinity (% of ppt) O 5 Fype r Glass	Other II L 赞述 Collected
Start Purge 1242 ANALYSIS Ana PA Total	End Purge /337 PRESERV lysis \Hs Metals	Total (min.) 55 MHON AND 526	Total Vol. (gal. (L.)  11  BOILLE R Method  LAB	PH (S.U.) 7.00 EQUIRMEN	S.C. (mS/cm) O. 9 22 TS Presen 4°	DO (mg/L)  0.38  vative  C	Turbidity (NTU) 7. 4  Number 2	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml	ORP (mV) - 84 Bottle 1 Ambe	Salinity (% of ppt) O 5 Fype r Glass	Other II L 赞述 Collected
Start Purge 1242 ANALYSIS Ana PA Total Dissolve	End Purge  /33'7  PRESERV  lyels  Hs  Metals  ed Metals	Total (min.) 55 NEON AND SEE	Total Vol. (gal. L.)  I BOILE R  Method  LAB.	PH (S.U.) 7.00 EQUIRMEN SPEC "	S.C. (mS/cm) O. 9 22 TS Presen 4° HN	po (mg/L) Ø-38 vative C 103	Number 2 1	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml 250 ml	ORP (mV) - 84 Bottle 1 Ambe Pla	Salinity (% of ppt) O. 5 Type r Glass astic	Other
Start Purge 1242 ANALYSIS Ana PA Total Dissolve	End Purge  /33'7  PRESERV  lyels  Hs  Metals  ed Metals	Total (min.) 55 NEON AND SEE	Total Vol. (gal. L.)  I BOILE R  Method  LAB.	PH (S.U.) 7.00 EQUIRMEN SPEC "	S.C. (mS/cm) O. 9 22 TS Presen 4°	po (mg/L) Ø-38 vative C 103	Number 2 1	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml 250 ml	ORP (mV) - 84 Bottle 1 Ambe Pla	Salinity (% of ppt) O. 5 Type r Glass astic	Other
Start Purge  /242  ANALYSIS Ana PA  Total  Dissolve	End Purge /33'7 PRESERV lyels HS Metals d Metals	Total (min.) 55 WHON AND SEE	Total Vol. (gal. L.)  I BOILLE RI Method LAB	PH (S.U.) 7.00 EQUIRMEN SPEC "	S.C. (mS/cm) O. 9 22 TS Presen 4° HN	DO (mg/L)  0 - 38  vative  C 103 103	Number 2 1 1	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml 250 ml	ORP (mV) - 84 Bottle 1 Ambe Pla	Salinity (% of ppt) O. 5 Type r Glass astic	Other
Start Purge 1242 ANALYSIS Ana PA Total i Dissolve	End Purge / 33'7 PRESERV Iyels HS Metals od Metals	Total (min.) 55 WHON AND SEE	Total Vol. (gal. L.)  I BOILLE RI Method LAB	PH (S.U.) 7.00 EQUIRMEN SPEC "	S.C. (mS/cm) O. 9 22 TS Presen 4° HN	DO (mg/L)  0 - 38  vative  C 103 103	Number 2 1 1	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml 250 ml	ORP (mV) - 84 Bottle 1 Ambe Pla	Salinity (% of ppt) O. 5 Type r Glass astic	Other
Start Purge 1242 ANALYSIS, Anal PA Total I Dissolve	End Purge /33'7 PRESERV lyels HS Metals d Metals	Total (min.) 55 WHON AND SEE	Total Vol. (gal. (L))  II  BOILE R  Method  LAB  " "	PH (S.U.) 7.00 EQUIRMEN SPEC " "	S.C. (mS/cm) O. 9 22 TS Presen 4° HN	DO (mg/L) 0-38  vative C 103 103	Number 2 1 1	Temp. (C°) /9. 2 7 Vol. 1 L 250 ml 250 ml	ORP (mV) - 84  Bottle 1  Ambe Pla	Salinity (% of ppt) O. 5 Type r Glass astic	Other



Notes:

### FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

		GEU	CHEMI	CAL PA	KAMEL	EK2			_
Tetra Tech NUS,	Inc.							Page ( of	2
Project Site	Name:	USCG Det	roit		٠	Sample ID N	io.: DA-N	WOIR-O	6/3
Project No.:		112G0243	5	_		Sample ID N	ation: MK	IOIR	
Sampled By:	TERRY	ROJAHA	<b>U</b>	_		Duplicate:			
Field Analyst	···					Blank:			
Field Form C	hecked as per (	QA/QC Chec	klist (initi	als):	TR				
SAMPLING DATA				肿性肿瘤					
Date: 6-Z	5-13	Color	pН	s.c.	Temp.	Turbidity	DO	Salinity	
Time: /3	40	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	PP+ CV TI	(+/- mv)
Method: PERIS.	taltic Pomr	CLEAR	7.00	0.922	19.27	7.4	0.38	0.5	- 84
	CTION/ANALYSIS I	NFORMATION			aljudjandhjer, .				
ORP (Eh) (+/-	mv)		Electrode I	Make & Mod	lel:			<del></del>	
			Reference	Electrode (d	circle one): S	Silver-Silver Chlor	ride / Calomel	/ Hydrogen	
Dissolved Ox	ygen:								
Equipment: Chem	etrics Test Kit					Concentration:	0.9	_ppm	
Range Used:	Rangé	Method	Concentra	tion ppm					
Ū.	0 to 1 ppm	K-7501	0.			Analysis Time:	1509	1	
4	1 to 12 ppm	K-7512	21			•		_	
		<u></u>	<del></del>		•				
Notes:									
Alkalinity:									<del></del>
Equipment: Chem	netrics Test Kit					Concentration:	37 <i>5</i>	ppm	
Range Used:	Range	Method	Concentra	tion ppm			_		
Ū.	10 to 100 ppm	K-9810	7.10 P.	MK	]	Analysis Time:	1506	_	
	50 to 500 ppm	K-9815	37	5			•	_	
4	100 to 1000 ppm	K-9820	37	75				Filtere	d: 🔲
Notes:	_								
Carbon Dioxi	de:								
Equipment: Chem	netrics Test Kit					Concentration:	<u>75</u>	_ppm	
					_	Analysis Time			
Range Used:	Range	Method	Concentra	tion ppm	]	Analysis Time	1459	_	
	10 to 100 ppm	K-1910	7	5	1			•	
	100 to 1000 ppm	K-1920			1				
	250 to 2500 ppm	K-1925	<u> </u>		ļ				
Notes:									
Ferrous Iron	(Fe ²⁺ ):								
Equipment:	HACH IR-18C	Color Wheel	Range: 0 -	10 mg/L		Concentration:	1.4	ppm	
						Analysis Time	1453		
Notes:						•		- Filtere	d: 🗆
Sulfide (S²):									
Equipment: Chem	natrice Test V*					Concentration	0.05	nom	
<del>'</del>		Na-14	Const	ton	1	concentration:	0.05	_ ppiii	
Range Used:	Range	Method	Concentra		ſ	A 1. · · ·	1519	•	
	0 to 1 ppm	K-9510	0.0	75	1	Analysis Time		-	
	1 to 10 ppm .	K-9510			I				



### **GEOCHEMICAL PARAMETERS**

Tetra Tech NUS, Inc.

Tetra Tech NUS, Inc.	Page Zof Z
Project Site Name: USCG Detroit	Sample ID No.: DA - MWOIR - 0613
Project No.: 112G02435	Sample Location: MWO/R
Sampled By: T. ROJAHN	Duplicate:
Field Analyst: T. ROJAHN	Blank:
Sulfate (SO ₄ ² ):  Equipment: HACH DR/890 Range: 2-70 mg/L  Program/Module: 92	Concentration: 51 ppm  Analysis Time: 1454
Notes:	Filter: L.J
QA/QC Checklist:	
All data fields have been completed as necessary.  Lack Correct measurement units are cited in the SAMPLING DATA block	
Values cited in the SAMPLING DATA block are consistent with the	Groundwater Sample Log Sheet:
Final calulated concentration is within the appropriate Range Used	block:
Title block on each page of form is initialized by person who perform	ned this QA/QC Checklist:

### **GROUNDWATER SAMPLE LOG SHEET**

<b>T</b>	etra Tec	h Inc.
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Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.:

112G02435

						Project N	0.:	112G0243	5		
Sample II	):	DA-MW02	R-0613			Sampled	By:	MARKA	TENGEL		
	plicate ID:					Sample D	ate:	06/25/13			
	Collected:	YES	(NO)			Sample T	lme:	1350			
WELLINE	PRIMATION:				3474	WENT CO.			<b>福建</b> 张建		<b>制制 </b>
Well ID:	MW02R					Purge Da	te:	06/25/13			
Well Diam	neter (in):	2'				Static Wa	ter Level (fi	-BTOR):	2.6	7.	
	reen (ft-BT	DR):	3'				tor Reading		NA		
	Screen (ft-		13'	_		Purge Me	thod:	Peristaltic	Pump	•	
Total Wel	Depth (ft-E	STOR):	13'			Sample M		Peristaltic			
EQUIPMEN	TENEGRM	NOETA		起時中華	TO THE REAL PROPERTY.			Market L		100	A. A. A. A.
Water Qu	ality Instrur	nent: Hor	18A U.S.	2 (4642	29x)	Pump Co	ntroller:	U7195	2 X		
Turbidity			i. Le	"					•		
<b>PURGE DA</b>	TATE	<b>製造</b> 72	District of the second		總全 計 ] 響	THE REAL PROPERTY.	THE BEST		# I SHEET	THE	山東門軍
Time	H ² 0 Level	Flow	Color	pН	s.c.	DO	Turbidity	Temp.	ORP	Salinity	Other
(Hrs)	(ft-BTOR)	mL/min.		(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)	
1255	2.67	180	cleAR	7.15	0.587	3.20	11.6	19.65	188	0.5	ı
1305	2.91	180	CICAR	7.20	0.510	2.22	814	20.43	133	0.2	
1315	2.97	180	CICAR	7.31	0.524	1.74	5.4	20.61	72	0.3	
1325	3.01	180	EleAR	7.41	0.550	1.97	3.2	20.53	52	0.3	
1335	3.02	180	CLEAR	7.29	0.553	1.58	4.3	20.29	46	0.3	
1345	3.04	180	CLEAR	7.24	0.554	1.51	3.2	20.13	43	0.3	
FINAL PUR	GE/SAMP	LE DATAL		2000年			<del></del>			A Mark	
Start	End	Total	Total Vol.	pH	S.C.	DO (Tag)	Turbidity	Temp.	ORP	Salinity	Other ·
Purge	Purge	(min.)	(gal./L)	(S.U.)	(mS/cm)	(mg/L)	(NTU) 3-2	(C°)	(mV) 43	(% or ppt)	•-
1255	/345	50	BOTTLER	7.29	0.554	1.51		20.13		と発表する	
		AHUN ANL	Method	ECHOIMMEN	Preser		Number	Vol.	Bottle '		Collected
	iysis Hs	<u>: رک</u>	E LAB 5	DSC.	<del></del>	.C	2	1 L		r Glass	V
	Metals		LAB S			103	1	250 ml		astic	V
			E LABSI			103	1	250 ml		astic	v
Dissolve	d Metals	362	. L/18 J		135			230 1111	ГК	35110	_
				<del></del>						· · · · ·	
						<del></del>	<del>                                     </del>	<del></del>			
						_					
				- '			<del> </del>				
	· · · · · · · ·			· · · · · · · · · · · · · · · · · · ·			<del> </del>				-
	. ————						<del> </del>				
Operation	HONETHO	TECH STREET		STATE STATES		138 /SP\$50 11		No. Selection	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th		
OBSEHVA	IONS / NO	(ES: \$ 4 ° C)									
Coord	inates:		N		E	Signature	(s):	ALN	mas		



## FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Ir	1C.							Page 101	
Project Site N	ame:	USCG De	troit	_		Sample ID N	o.: <i>DA-</i>	MWOZR-	- 0613
Project No.: 112G02435						Sample Loca		nwezk	
Sampled By: MARK MENGEL						Duplicate:			
Field Analyst:		ROSAH		•		Blank:			
Field Form Ch	necked as per C			als):	TR	1_			
SAMPLING DATA								r yalligad (sa	
Date: 6	25-13	Color	pН	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
	350	(Visual)	(S.U.)	(mS/cm)	(°C)	(טדעו)	(mg/l)	120+ (36)	(+/- mv)
	Altic Pump	CIEAR	7.29	0.554	20.13	3.2	1.51	0.3	43
	TIONANALYSIS		N:	ijiliya eye					
ORP (Eh) (+/- ı	mv)		Electrode M	Vake & Mode	el:				
			Reference	Electrode (c	ircle one): S	ilver-Silver Chlori	de / Calomel	/ Hydrogen	
Dissolved Oxy	/gen:								•
Equipment: Cheme	etrics Test Kit		:			Concentration:	2.7	ppm	
Panna Head:	Pance	Method	Concentrat	ion nom				_	
Range Used.	lange Used: Range Method Concentration ppm  0 to 1 ppm K-7501		JOH PPHI		Analysis Time:	1412			
	0 to 1 ppm 1 to 12 ppm	K-7512	2.7	7		rulalysis fillic.			
	1 to 12 ppm	K-7512	1 2.1						
Notes:							•		
Alkalinity:	-					<del></del>		<u> </u>	
Equipment: Chemetrics Test Kit						Concentration:	18G	ppm	
	and root rac							_PP	
Range Used:	Range	Method	Concentrat	tion ppm					
	10 to 100 ppm	K-9810				Analysis Time:	1424	•	
7	50 to 500 ppm	K-9815	180	)		,		_	
7	100 to 1000 ppm	K-9820	180					Filtere	ed: 🗆
Notes:		<del>!</del>							
Carbon Dioxid	le:							- ,	
Equipment: Cheme	trics Test Kit					Concentration:	26	ppm	
								_,,,	
Range Used:	Range	Method	Concentrat	ion ppm		Analysis Time:	1418		
Ø	10 to 100 ppm	K-1910	26	•			-	_	
	100 to 1000 ppm	K-1920							
	250 to 2500 ppm	K-1925		_					
Notes:									
Ferrous Iron (I	Fe ²⁺ ):								
Equipment:	HACH IR-18C C	olor Wheel	Range: 0 -	10 mg/L		Concentration:	0	ppm	
				·• ···g-				- FF	
}						Analysis Time:	1428		
Notes:						radiyolo (IIIIo.	730	-	ed: 🔲
Sulfide (S ² ):		<del></del>						1 11010	<del>70.</del>
						0	O		
Equipment: Cheme			T			Concentration:		_ppm	
Equipment: Cheme Range Used:	Range	Method	Concentrat	ion ppm				<b>→</b> ···	
Equipment: Cheme		Method K-9510	Concentrat	ion ppm		Analysis Time:		<b>→</b> ···	



### FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 2 of 2 Tetra Tech NUS, Inc. Sample ID No.: **Project Site Name: USCG Detroit** DA-MWOZR-0613 Project No.: 112G02435 Sample Location: Sampled By: MARK MENGEL Duplicate: Field Analyst: TERRY Blank: Sulfate (SO₄2'): Equipment: HACH DR/890 Range: 2-70 mg/L Concentration: Program/Module: 92 1437 Analysis Time: Filter. Notes: QA/QC Checklist: All data fields have been completed as necessary: Correct measurement units are cited in the SAMPLING DATA block: Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: Final calulated concentration is within the appropriate Range Used block: 4 Title block on each page of form is initialized by person who performed this QA/QC Checklist:

### **GROUNDWATER SAMPLE LOG SHEET**

Tetra Tech Inc			-	
	Tt	Tetra	Tech	Inc.

Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

						Project N	0.:	112G0243	5		
Sample II	D:	DA-MW04	4-0613			Sampled	Ву:	MARK	MENGE	L	
	uplicate ID:		-				Sample Date: 06/25/13				
MS/MSD	Collected:	YES)	NO			Sample T	lme:	1540			
			120	的事物			AL LINE	<b>李林 雅雄</b>	ELEGA V	<b>計加加</b>	
Well ID:	MW04					Purge Da	te:	06/25/13			
Well Diar	meter (in):	2'				Static We	ater Level (fi	t-BTOR):	3.5	8	
	creen (ft-BT0	OR):	3'			PID Mont	tor Reading		NA		
Bottom of	of Screen (ft-	-BTOR):	13'			Purge Me		Peristaltic			
	ll Depth (ft-E		13'			Sample M		Peristaltic	Pump		
				1117-1117-11-11							APRIL T
Water Qu	ality Instru	ment: 146,	RIBA U.	:52 (46	4229x}	Pump Co	یک :ntroller	ERPUMP	4719:	52×	
Turbidity	Meter:		410		e r		- Constant	in the second of			
				_						<b>三温泉湖</b> 当算	
Time (Um)	H ² 0 Level		Color	pH (SII)	S.C. (mS/cm)	DO (mo/l.)	Turbidity (NTU)	Temp.	ORP (m\/)	Salinity (% or not)	Other
(Hrs)	(ft-BTOR)	mL/min.		(S.U.)	<del></del>	(mg/L)	10.2	(C°)	(mV)	(% or ppt)	
1450	3.58	220	CICAR	7.06	<del> </del>	5.97		15.96	70	0.4	
1500	3.90	220	CLEAR	6.91	0.738		2.1	16.43	81	0.4	
1510	4.01	220	CLEAR	6.81	0.740		1.7	1678	88	0.4	<del></del>
1520	4.17	220	CICAR	6.83	0.761	5.68	0	16 88		0.4	<b>!</b>
1530	4.30	220	CLEAR	689	0.772	5.48	0	12.67	64	0.4	
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			Total Val								
Start Purge	End Purge	Total (min.)	Total Vol.	<b>pH</b> (S:U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other
1450		40	8.8	6.89	0.772	5.48	(110)	16.67	44	0.4	
			D BOTTLE B							<b>编</b> 主	<u> </u>
	alysis	Section of the section	Method	A TOWN STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF TH	Preser		Number	Vol.	Bottle 1		Collected
	AHs	SEE		PEC	<del></del>	l°C	47	1 L		er Glass	2
	Metals	11		1,	<del></del>	NO3	1	250 ml		astic	-
Dissolved Metals			<del></del>	N03	1	250 ml		astic	~		
	70 III	17			<b>—</b>	122	<del>                                     </del>				
<del></del>	<del></del>	<del></del>			<del> </del>						<del> </del>
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### FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, I	nc.						·	Page of	<u>د</u>
Project Site N	lame:	USCG Det	roit	-		Sample ID No	o.: DA-A	INO Age	26/3
Project No.:	5	•		Sample Loca	tion: 🗡	W04			
Sampled By:	EL	-		Duplicate:					
Field Analyst	TERRY	RUSAL	421	_		Blank:			
Field Form C	hecked as per C	A/QC Che	cklist (initi	als):	TK	l			
SAMPLING DATA							importe de d		
	5-13	Color	рН	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time:	540	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	PP ON	(+/- mv)
	taltic Pump		6.89	0.772		<b>O</b>	5.48	0.4	64
SAMPLE COLLECTION ANALYSIS INFORMATION: 10 10 10 10 10 10 10 10 10 10 10 10 10									
ORP (Eh) (+/-	mv)			Make & Mod					
<del> </del>	<del></del>		Reference	Electrode (d	circle one): S	Silver-Silver Chlori	de / Calomei /	Hydrogen	
Dissolved Ox	ygen:	•					/		
Equipment: Chem	etrics Test Kit					Concentration:		ppm	
Range Used:	Range	Method	Concentra	tion ppm					
4	0 to 1 ppm	K-7501	/			Analysis Time:	1553	_	
	1 to 12 ppm	K-7512	1					•	
	<u> </u>	·	<del></del> -		•				
Notes:									
Alkalinity:		_							
Equipment: Chem				Concentration:	400	ppm			
Range Used:	Range	Method	Concentra	tion ppm					
	10 to 100 ppm	K-9810				Analysis Time:	1549	•	
4	50 to 500 ppm	K-9815	40						
	100 to 1000 ppm	K-9820	37	5				Filtered	: [_]
Notes:									
Carbon Dioxi	de:					,		•	•
Equipment: Chem				Concentration:	60	ppm			
Range Used:	Range	Method	Concentra	tion ppm		Analysis Time:	1539		
V	10 to 100 ppm	K-1910	6	O					
	100 to 1000 ppm	K-1920							
	250 to 2500 ppm	K-1925	<u> </u>						
Notes:					<u> </u>				
Ferrous Iron	(Fe ²⁺ ):								
Equipment: HACH IR-18C Color Wheel Range: 0 - 10 mg/l					•	Concentration:	0.4	ppm	
					•	Analysis Time:	1/. 1/1	,	
Makas						счануыв і іпіе;	1004	-	. 🗂
Notes:	<del></del>					<del></del>		Filtered	. —
Sulfide (S ² ):	` ` `								
Equipment: Chem			T _a		l	Concentration:		ppm	
Range Used:	Range	Method	Concentra			–	://2	•	
<u>L</u>	0 to 1 ppm	K-9510	<u> </u>	<del>-</del> :		Analysis Time:	1603	•	
	1 to 10 ppm	K-9510	<u> </u>	·	J				
Notes:									



## FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.	Page - of -
Project Site Name: USCG Detroit	Sample ID No.: DA - MW04 · 06/3 Sample Location: MW04
Project No.: 112G02435	Sample Location: MW04
Sampled By: MARK MENGEL	Duplicate:
Field Analyst: TERRY ROSAHM	Blank:
Sulfate (SO ₄ ² ):	
Equipment: HACH DR/890 Range: 2-70 mg/L	Concentration: > 6 ppm
Program/Module: 92	
	Analysis Time: 1545
Notes:	Filter:
QA/QC Checklist:	
All data fields have been completed as necessary:	
Correct measurement units are cited in the SAMPLING DATA block	k 🗖
Values cited in the SAMPLING DATA block are consistent with the	Groundwater Sample Log Sheet:
Final calulated concentration is within the appropriate Range Used	block:
Title block on each page of form is initialized by person who perforr	ned this QA/QC Checklist:

ATTACHMENT C DISPOSAL MANIFEST

	gned for use on alite (12-pitch) typewn	ter.)	<u> </u>		14 00		n Approved. (	MB No. 2	M60-0038
WASTE MANIFEST	MIK 112 991 844	. 1	3. Ensergency Respons (313) 347-1:	300		030	<u> 2659</u>	_J.	IK_
1248 EAST STH RM 2178 CLEVELAND, O Generator's Phone:	H 44198 (218) 802-8255		Generalov's Site Address  2880 EAST A  DETROIT, IN	ATWATI	ER STRE	ET	_		
6. Transporter 1 Company Na EQ INDUSTRIA					U.S. EPA ID	юлион 800 26:			
7. Transporter 2 Company Mar			<del></del>		U.S. EPAID		8/1		
7. Charapteres 2 Company Ha	16				I	Lafte i Militer			
A Designated Facility Name at 1923 FREDERIK DETROIT, MI 44 Facilities Phone: (31)	<b>X</b>	T, INC.			U.S. EPAID	Humber 989 99	1 566		•
	don (including Proper Shipping Name, Haza	ri Class. ID Number	10. Conte	inera .	11. Total	12. Unit	Γ		
9a. 9b. U.S. DOT Descrip HM and Packing Group (if			No.	Type	Quantity	WEAGE.	13. W	este Code	3
1.NON HAZARD	OUS SOLID WASTE, NOT DO	T NOT RCRA REGULAT	ED 602	DM	01100	P	MIE		
2			ļ	1		ļ	1000		
2 Non Hazardous	Liquid Wests, Not Dot Not RC	RA Regulated	002	Dm	00500	P	0291.	-	
3.									
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			l	1		1			
						1			
2155	3 Hex IDW Selids 2. H1380411								
marked and labeled/place Exporter, I certify that the I certify that the weste mi	OR'S CERTIFICATION: I hereby declare the orded; and are in all respects in proper cond contents of this consignment conform to the nimization statement Identified in 40 CFR 28	tion for transport according to appli terms of the attached EPAAcknow	icable international and nat designment of Consent.	tional governm	ental regulations				
Generator's/Offeror's Printed/T	ped Name	Si	Ineture V				Monte		Year
Anthony	V. Grazia.		affer				08	08	13
<b>C</b> I	Land Dispose to Great	Expert from							
Transporter signature (for expo		<del></del> _	Date leav	πg U.S.:					
Transporter 1 Printed/Typed Na		Sic	meture				Month	Day	Year
	WORK	l .	Chan	IN	·		1 08	1 08	13
R Haron Trimeporter 2 Printed/Typed No		Sig	nature				Month	Dey	Year
2				_			1	j	
18. Discrepancy									
18a. Discrepancy Indication Sp	Quantity	Туре	Residue Manifest Reference	a Museum	Pertial Rej	jection		Full Rejec	etton
18b. Alternate Facility (or General Facility's Phone:	rator)		Transmitted Caraca College		U.S. EPAID I	tumber		<del></del> -	
18c. Signature of Alternate Fac							Mort	n Day	You
19. Hezardous Waste Report M	larragement Method Codes (i.e., codes for h	nzardous waste treatment, dispose	i, and recycling systems)		<del></del>				
NONE	_ UW	l _r	4						- 1
	or Operator: Continuation of receipt of hazzard	ing materials covered by the servi	feel except on make in a	- 16		<del>-}-</del>	<del>- : -</del>		∤
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Printed/Typed Name	Previous editions are obsolete.	 	neture				18	- 8	131



### CERTIFICATE OF MANAGEMENT

This Certificate is to verify that the wastes specified on the following manifest(s) have been properly received and will be properly managed to meet all applicable local, state, and federal regulations.

Generator Name:	US COAST GUARD						
Manifest/BOL Number:	010302659JJK						
Approval Number(s):	H138038DET	H138041DET					
	·						

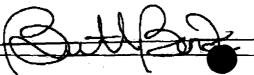
FACILITY NAME: EQ DETROIT, INC.

EPA ID#:MID980991566

ADDRESS: 1923 Frederick

PHONE NUMBER: 313-347-1300 FAX NUMBER: 313.923.3375

**AUTHORIZED SIGNATURE:** 



onbeholf of Equation

ATTACHMENT D LABORATORY REPORTS



July 15, 2013

TETRA TECH NUS - Pittsburgh Attn: Mr. Joe Logan 661 Anderson Drive, Foster Plaza 7 Pittsburgh, PA 15220

#### **Project: USCG Atwater Facility**

Dear Mr. Joe Logan,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

**Work Order** 

Received

Description

1306471

06/27/2013

Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); DEP (#88-0730/12-056-0); Arkansas Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#83658); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soll Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood
Project Chemist



Clent: **TETRA TECH NUS - Pittsburgh** 

Project: **USCG Atwater Facility** 

Client Sample ID: DA-MW01R-0613

Lab Sample ID:

1306471-01

Matrix: Unit:

Water ug/L 1

Dilution Factor:

QC Batch: 1306734 Work Order:

1306471

Description: **Laboratory Services** 

Sampled:

06/25/13 13:40

Sampled By:

T.R.

06/27/13 10:00

Received: Prepared:

07/01/13

By: SMS9

Analyzed:

07/11/13

By: JLB

Analytical Batch:

3G12006

#### *Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32-9	Acenaphthene	0.54U	0.54	0.035
208-96-8	Acenaphthylene	0.54U	0.54	0.018
120-12-7	Anthracene	0.54U	0.54	0.066
56-55-3	Benzo(a)anthracene	0.54U	0.54	0.049
50-32-8	Benzo(a)pyrene	0.54U	0.54	0.043
205 <del>-99-</del> 2	Benzo(b)fluoranthene	0.54U	0.54	0.062
207-08-9	Benzo(k)fluoranthene	0.54U	0.54	0.064
191-24-2	Benzo(g,h,i)perylene	0.54U	0.54	0.065
218-01-9	Chrysene	0.54U	0.54	0.049
53-70-3	Dibenz(a,h)anthracene	0. <del>54</del> U	0.54	0.12
206-44-0	Fluoranthene	0.54U	0.54	0.067
86-73-7	Auorene	0. <del>54</del> U	0.54	0.044
193-39-5	Indeno(1,2,3-cd)pyrene	· 0.54U	0.54	0.086
91-57-6	2-Methylnaphthalene	0.54U	0.54	0.016
91-20-3	Naphthalene	0.54U	0.54	0.033
85-01-8	Phenanthrene	0.54U	0.54	0.046
129-00-0	Pyrene	0.5 <del>4</del> U	0.54	0.071

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>86</i>	<b>40</b> -110
2-Fluorobiphenyl	<i>87</i>	<i>50-110</i>
o-Terphenyl	94	<i>50-135</i>



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-0613

Lab Sample ID: Matrix:

1306471-01

Water

Work Order:

1306471

Description:

**Laboratory Services** 

Sampled:

06/25/13 13:40

Sampled By:

T.R.

Received:

06/27/13 10:00

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	5.0		1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 10:52	MSM	1306716
Barium	300		5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 10:56	KTA	1306716
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 09:47	KLV	1306716
Chromium	0.71	J	1.0	0.20	ug/L	1	USEPA-6020A	07/09/13 09:47	KTA	1306716
*Copper	0.73	3	1.0	0.13	ug/L	1	USEPA-6020A	07/09/13 09:47	KTA	1306716
Lead	0.56	3	1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 09:47	KTA	1306716
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 16:12	CKD	1306738
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 13:52	KLV	1306716
Silver	0.20	U,	0.20	0.037	ug/L	1	USEPA-6020A	07/09/13 09:47	KTA	1306716
Zinc	7.0	J	10	1.5	ug/L	1	USEPA-6020A	07/09/13 09:47	KLV	1306716



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-0613

Lab Sample ID:

1306471-01

Matrix:

Water

Work Order:

1306471

Description:

**Laboratory Services** 

Sampled:

06/25/13 13:40

Sampled By:

T.R.

Received:

06/27/13 10:00

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		, RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	4.6		1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 10:28	MSM	1306715
Barlum	290		5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 10:27	KLV	1306715
Cadmium	0.044	3.	0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 09:02	KTA	1306715
Chromium	0.54	3	1.0	0.20	ug/L	1	USEPA-6020A	07/09/13 09:02	KLV	1306715
*Copper	0.71	3	1.0	0.13	ug/L	1	USEPA-6020A	07/09/13 09:02	KLV	1306715
Lead	2.0		1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 09:02	KTA	1306715
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 15:21	CKD	1306737
*Selenium	0.69	3	1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 13:19	KLV	1306715
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	07/09/13 09:02	KTA	1306715
Zinc	2.7	3	10	1.5	ug/L	1	USEPA-6020A	07/09/13 09:02	KTA	1306715



Clent:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Clent Sample ID:

DA-MW02R-0613

Lab Sample ID:

1306471-02

Matrix:

Water

Unit:

ug/L

Dilution Factor: QC Batch:

1 1306734 Work Order:

1306471

Description:

Laboratory Services

Sampled:

06/25/13 13:50

Sampled By:

T.R.

Received: Prepared:

Analyzed:

06/27/13 10:00

07/01/13 07/11/13

By: SMS9 By: JLB

Analytical Batch:

3G12006

#### Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32-9	Acenaphthene	0.50U	0.50	0.033
208-96-8	Acenaphthylene	0.50บ	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205-99-2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,l)perylene	<b>0.50</b> U	0.50	0.061
218-01- <del>9</del>	Chrysene	0.50U ·	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50บ	0.50	0.11
206-44-0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene ·	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limit
Nitrobenzene-d5	81	40-110
2-Fluorobiphenyl	83	50-110
o-Terphenvi	93	50-135



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-0613

Lab Sample ID: Matrix: 1306471-02

Water

Work Order:

1306471

Description:

**Laboratory Services** 

Sampled:

06/25/13 13:50

Sampled By:

T.R.

Received:

06/27/13 10:00

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	0.55	,	1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 10:53	MSM	1306716
Barlum	100		5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 11:00	KTA	1306716
Cadmium	0.20	Ų	0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 09:50	KLV	1306716
Chromium	0.79	3	1.0	0.20	ug/L	. <b>1</b>	USEPA-6020A	07/09/13 15:57	KTA	1306716
Copper	1.3		1.0	0.13	ug/L	1 -	USEPA-6020A	07/09/13 09:50	KLV	1306716
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 09:50	KLV	1306716
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 16:17	CKD	1306738
*Selenium	1.4		1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 13:55	KTA	1306716
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	07/09/13 09:50	KTA	1306716
Zinc	3.7	J	10	1.5	ug/L	1	USEPA-6020A	07/09/13 09:50	KLV	1306716



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-0613

Lab Sample ID: Matrix: 1306471-02

Water

Work Order:

1306471

Description:

**Laboratory Services** 

Sampled:

06/25/13 13:50

Sampled By:

T.R.

Received:

06/27/13 10:00

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analyticai Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	0.58	3	1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 10:29	MSM	1306715
Barium	110		5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 10:30	KLV	1306715
Cadmium	0.042	3	0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 09:05	KTA	1306715
Chromium	0.98	J	1.0	0.20	ug/L	1	USEPA-6020A	07/09/13 15:31	KTA	1306715
Copper	1.3		1.0	0.13	ug/L	1 .	USEPA-6020A	07/09/13 09:05	KLV	1306715
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 09:05	KTA	1306715
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 15:36	CΦ	1306737
Selenium	1.0	υ	1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 13:21	KLV	1306715
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	07/09/13 09:05	KTA	1306715
Zinc	2.8	J	10	1.5	ug/L	1	USEPA-6020A	07/09/13 09:05	KLV	1306715



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-0613

Lab Sample ID:

1306471-03

Matrix:

Water

Unit: Dilution Factor: ug/L 1

QC Batch:

1306734

Work Order:

1306471

Description:

Laboratory Services

Sampled:

06/25/13 15:40

Sampled By:

T.R.

Received:

06/27/13 10:00

Prepared: Analyzed: 07/01/13 07/12/13 By: SMS9
By: JLB

Analytical Batch:

3G12031

#### Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0.50U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.0623	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
20 <del>5-99-</del> 2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207 <del>-</del> 08 <del>-9</del>	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-2 <del>4-</del> 2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01- <del>9</del>	Chrysene	0.0523	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
20 <del>6-41-</del> 0	Fluoranthene	<b>0.50U</b>	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-od)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthaiene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	88	40-110
2-Fluorobiphenyl	83	50-110
o-Terphenyl	<i>89</i>	50-135



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-0613

Lab Sample ID:

1306471-03

Matrix:

Water

Work Order:

1306471

T.R.

Description:

Laboratory Services

Sampled:

06/25/13 15:40

Sampled By: Received:

06/27/13 10:00

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	QC By Batch
Arsenic	1.9	1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 10:54	MSM 1306716
*Barlum	190	5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 11:12	KLV 1306716
Cadmium	0.31	0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 09:54	KLV 1306716
Chromium	0.83	J 1.0	0.20	ug/L	1	USEPA-6020A	07/09/13 09:54	KLV 1306716
Copper	1.9	1.0	0.13	ug/L	1	USEPA-6020A	07/09/13 09:54	KLV 1306716
Lead	3.0	1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 09:54	KLV 1306716
Mercury	0.20	U 0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 16:22	CKD 1306738
Selenium	2.6	1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 13:58	KLV 1306716
Silver	0.20	U 0.20	0.037	ug/L	1	USEPA-6020A	07/09/13 09:54	KLV 1306716
*Zinc	180	50	7.5	ug/L	5	USEPA-6020A	07/09/13 11:12	KLV 1306716



Client:

TETRA TECH NUS - Pittsburgh

Project:

Matrix:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-0613

Lab Sample ID:

1306471-03

Water

Work Order:

1306471

Description:

**Laboratory Services** 

Sampled:

06/25/13 15:40

Sampled By:

T.R.

Received:

06/27/13 10:00

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	1.4		1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 10:29	MSM	1306715
*Barlum	190		5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 10:34	KLV	1306715
Cadmlum	0.34		0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 09:09	KLV	1306715
Chromium	0.71	J	1.0	0.20	ug/L	1	USEPA-6020A	07/09/13 09:09	KLV	1306715
Copper	1.4		1.0	0.13	ug/L	1	USEPA-6020A	07/09/13 09:09	KLV	1306715
Lead	3.8		1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 09:09	KLV	1306715
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 15:41	CKO	1306737
Selenium	4.9		1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 13:24	KLV	1306715
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	07/09/13 09:09	KTA	1306715
*Zinc	190		50	7.5	ug/L	5	USEPA-6020A	07/09/13 10:34	KTA	1306715



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD-062513

Lab Sample ID:

1306471-04

Matrix:

Water

Unit:

ug/L

Dilution Factor: 1

QC Batch:

1306734

Work Order:

1306471

T.R.

Description:

**Laboratory Services** 

Sampled:

06/25/13 00:00

Sampled By: Received:

Analyzed:

06/27/13 10:00

Prepared:

07/01/13 By: SMS9

07/11/13

By: JLB

Analytical Batch:

3G12006

#### Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32-9	Acenaphthene	0.50U	0.50	0.033
20 <del>8-96-8</del>	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	. 0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205-99-2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01-9	Chrysene	0.50∪	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
20 <del>6-44-</del> 0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>86</i>	40-110
2-Fluorobiphenyl	88	50-110
o-Terphenyl	. <i>97</i>	<i>50-135</i>



Clent:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD-062513

Lab Sample ID: Matrix: **1306471-04** Water

Work Order:

1306471

Description:

Laboratory Services

Sampled:

06/25/13 00:00

Sampled By:

T.R.

Received:

06/27/13 10:00

#### Dissolved Metals by EPA 6000/7000 Series Methods

Anatyte	Analytical Result		RL.	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	4.9	-	1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 11:00	MSM	1306716
Barlum	290		5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 11:30	KLV	1306716
Cadmlum	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 10:12	KLV	1306716
Chromium	0.86	J	1.0	0.20	ug/L	1	USEPA-6020A	07/09/13 10:12	KLV	1306716
*Copper	0.55	3	1.0	0.13	ug/L	1	USEPA-6020A	07/09/13 10:12	KLV	1306716
Lead	0.41	J	1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 10:12	KLV	1306716
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 16:47	CKD	1306738
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 14:12	KLV	1306716
Silver	0.20	U	0.20	0.037	ug/L `	1	USEPA-6020A	07/09/13 10:12	KLV	1306716
Zinc	2.9	J	10	1.5	ug/L	1	USEPA-6020A	07/09/13 10:12	KLV	1306716



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD-062513

Lab Sample ID:

1306471-04

Matrix:

Water

Work Order:

1306471

Description:

**Laboratory Services** 

Sampled:

06/25/13 00:00

Sampled By:

T.R.

Received:

06/27/13 10:00

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	5.1		1.0	0.18	ug/L	1	USEPA-6020A	07/11/13 10:33	MSM	1306715
Barium	300		5.0	0.68	ug/L	5	USEPA-6020A	07/09/13 10:52	KLV	1306715
Cadmium	0.040	3	0.20	0.038	ug/L	1	USEPA-6020A	07/09/13 09:27	KLV	1306715
Chromium	0.54	J	1.0	0.20	ug/L	1	USEPA-6020A	07/09/13 09:27	KTA	1306715
*Copper	0.81	J	1.0	0.13	ug/L	1	USEPA-6020A	07/09/13 09:27	KTA	1306715
Lead	2.1		1.0	0.15	ug/L	1	USEPA-6020A	07/09/13 09:27	KTA	1306715
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	07/03/13 15:56	ŒΦ	1306737
Selenium	1.0	IJ	1.0	0.31	ug/L	1	USEPA-6020A	07/09/13 13:38	KLV	1306715
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	07/09/13 09:27	KLV	1306715
Zinc	4.7	J	10	1.5	ug/L	1	USEPA-6020A	07/09/13 09:27	KLV	1306715



#### STATEMENT OF DATA QUALIFICATIONS

#### Semivolatile Organic Compounds by EPA Method 8270C

Qualification: The RL for this analysis was elevated due to insufficient sample volume or weight received.

Analysis: USEPA-8270C

Sample: 1306471-01

DA-MW01R-0613



#### STATEMENT OF DATA QUALIFICATIONS

#### Dissolved Metals by EPA 6000/7000 Series Methods

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was less than 4 times the spiked amount; the non-spiked sample result is

considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 1306471-03

DA-MW04-0613

Barium

Qualification: The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the

lower of the two results has been reported.

Analysis: USEPA-6020A

Sample/Analyte: 1306471-01

DA-MW01R-0613 1306471-02

DA-MW02R-0613

Copper

1306471-04

DA-FD-062513

Selenium Copper

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is not qualified.

Analysis: USEPA-6020A

Sample/Analyte: 1306471-03

DA-MW04-0613

Zinc



#### STATEMENT OF DATA QUALIFICATIONS

#### Total Metals by EPA 6000/7000 Series Methods

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration

for the same analyte was less than 4 times the spiked amount; the non-spiked sample result is

considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 1306471-03

DA-MW04-0613

Barlum

1306471-03

DA-MW04-0613

Zinc

Qualification: The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the

lower of the two results has been reported.

Analysis: USEPA-6020A

Sample/Analyte: 1306471-01

DA-MW01R-0613 DA-MW01R-0613 Copper

1306471-01

Selenium

1306471-04

DA-FD-062513

Copper

	CT NO:	FACILITY:				NAGE			IONE N				LABOR	ATORY	NAME /	ND C	ONTACT:	<u> </u>
SAMP	LERS (SI	935 PETAOIT- AT	WATER	FIELD	OPER	CAA RIONS MALO	LEADER	Pi	/2) タ IONE N /2) 3	UMBER			ADDRE	95	Salaje.	7	ARY K	NAGE CH
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ATTACHMENT E
DATA VALIDATION REPORT
(on pdf)

**SEPTEMBER 2013 EVENT** 



#### **TETRA TECH**

661 Andersen Drive = Pittsburgh, Pennsylvania 15220-2745 (412) 921-7000 = FAX (412) 921-4040 = www.tetratech.com

PITT 11-13-002

November 6, 2013

Mr. James Cook Environmental Engineer USCG Civil Engineering Unit 1240 East Ninth St., Rm. 2179 Cleveland, OH 44199-2060

Reference:

Contract Number HSCG83-08-D-3CL109

Task Order Number HSCG83-09-J-3CL358

Subject:

Groundwater Monitoring Report (September 2013 Event) for U.S. Coast Guard

**Atwater Facility** 

Dear Mr. Cook:

Tetra Tech, Inc. (Tt) is pleased to submit this quarterly Groundwater Monitoring Letter Report for the referenced Task Order for the United States Coast Guard (USCG) Atwater Facility in Detroit, Michigan. The objective of this portion of the project includes quarterly monitoring of the groundwater associated with the Atwater Facility (Figure 1) following the removal action conducted in April 2013. The sampling is being performed according to Modification 004 of the Task Order.

Four quarterly groundwater sampling events are planned. The first event was performed in June 2013. The second event, described in this report, was performed in September 2013. The next events are scheduled for December 2013 and March 2014. Field activities and groundwater analytical results for the September 2013 event are summarized in this report. The work was performed in accordance to the Field Sampling Plan - Soil and Groundwater (Tetra Tech, 2011) and the Quality Assurance Project Plan Addendum (Tetra Tech, 2011).

#### **FIELD OPERATIONS**

#### **Groundwater Sampling**

Depth-to-water measurements were obtained at the three monitoring wells and to the Detroit River on September 17, 2013. Water level depths in the wells ranged from 3.42 (MW02R) to 4.02 (MW01R) feet below top of casing (BTOC). Groundwater elevation data is provided in Table 1.

The groundwater level elevations in the three wells were lower (0.22 foot to 1.39 foot) during the September 2013 event as compared to the June 2013 event. The groundwater flow direction was toward the river.

On September 17, 2013, Tt collected groundwater samples from the three monitoring wells, MW01R, MW02R, and MW04. A duplicate sample was collected from MW01R. Samples were collected using low flow methods. Copies of the Groundwater Sample Log Sheets and Low Flow Purge Data Sheets are included in Attachment A. Following collection, the groundwater samples were shipped to Trimatrix Laboratories in Grand Rapids, Michigan for analysis of polynuclear aromatic hydrocarbons (PAHs) by EPA Method SW846 8310 and for total and dissolved Michigan 10 metals by EPA Methods 6020A and 7470A. Groundwater for dissolved metals analyses were filtered in the field using a 0.45 micron filter.

Purge water was drummed and was subsequently disposed of off-site by EarthSmart Environmental Solutions, LLC after confirming the results of the groundwater analyses (see Attachment B).

Groundwater samples were also analyzed for geochemical parameters using field kits and meters. The field kit analyses included dissolved oxygen (DO), alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate. The field meter measurements included pH and oxidation-reduction potential (ORP).

#### **RESULTS**

#### **Laboratory Results**

The analytical results for this event are summarized in Table 2. This table also includes the results from the previous sampling events. A copy of the laboratory summary report for this event is provided in Attachment C. The data validation report is included in Attachment D as a separate pdf.

The PAH analytical results were not significantly different from the 2011/2012 sampling events and the June 2013 event. However, unlike the 2011/2012 results from MW02, PAHs were not detected in the sample from MW02R during this event and the June 2013 event. Similarly, the PAH concentrations were less than detection limits in MW04 in this event, compared to the trace concentrations of two PAHs (benzo(a)anthracene and chrysene) detected during the June 2013 event. The concentrations of PAHs in the wells were less than the Michigan Department of Environmental Quality (MDEQ) residential exposure criteria.

At MW01R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW01, except for arsenic. The total arsenic concentrations (sample and duplicate) in the sample from MW01R were 3.2  $\mu$ g/L and 3.5  $\mu$ g/L, respectively, and the dissolved arsenic concentrations (sample and duplicate) were 2.8  $\mu$ g/L and 3.1  $\mu$ g/L, respectively. The range of total arsenic concentrations from the 2011/2012 samples from MW01 was 0.52  $\mu$ g/L to 1.5  $\mu$ g/L, and the range of dissolved arsenic concentrations was 0.6  $\mu$ g/L to 0.95  $\mu$ g/L. The September 2013 concentrations were slightly less than the June 2013 concentrations. Although the arsenic concentrations were elevated for this round, they are less than the United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) of 10  $\mu$ g/L.

At MW02R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW02, except for arsenic. The total arsenic concentration in the sample from MW02R was 1.4  $\mu$ g/L, and the dissolved arsenic concentration was 1.5  $\mu$ g/L. The range of total arsenic concentrations from the 2011/2012 samples from MW02 was 6.2  $\mu$ g/L to 14  $\mu$ g/L, and the range of dissolved arsenic concentrations was 1J  $\mu$ g/L to 12  $\mu$ g/L. The September 2013 arsenic concentrations were slightly greater than the June 2013 concentrations. The arsenic concentrations for this round are less than the USEPA MCL of 10  $\mu$ g/L.

Total metals concentrations and dissolved metals concentrations in MW04 were generally similar to the previous results, except for arsenic. The total arsenic concentration in the sample was 7.3  $\mu$ g/L, and the dissolved arsenic concentration was 7  $\mu$ g/L. The range of total arsenic concentrations from the 2011/2012 samples and the June 2013 event was 0.87J  $\mu$ g/L to 3.8J  $\mu$ g/L, and the range of dissolved arsenic concentrations was 0.84J  $\mu$ g/L to 3.6J  $\mu$ g/L. The September 2013 arsenic concentrations were significantly greater than the June 2013 concentrations, but still less than the USEPA MCL of 10  $\mu$ g/L.

#### **Field Measurements**

Groundwater samples were analyzed in the field using field kits and meters to evaluate the geochemistry and its effects on contaminant concentrations and the potential for biological activity. Samples were analyzed for DO, alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate with field kits, and pH and ORP were measured with field meters. These results are summarized on Table 3.

The results for MW01R suggest anaerobic biological activity. The DO was low, and the ORP was negative. The ORP result was similar to previous measurements from MW01. Alkalinity, carbon dioxide, and ferrous iron concentrations were relatively high, which are also typical of anaerobic biological activity. Sulfide was detected. The sulfate concentration was much less than the last event, and the pH was in the neutral range.

Many results from MW02R were similar to MW01R. The DO was still greater than 1 mg/L, but less than the last event. The ORP was negative compared to the positive result during the last event. The ORP results from previous measurements at MW02 were typically negative. The alkalinity concentration was greater than the result from MW01R, and the carbon dioxide concentration was approximately one third of the result from MW01R. The ferrous iron concentration was just detectable, and sulfide were detected which suggests the absence of anaerobic activity. The sulfate concentration was similar the previous result, and the pH was in the neutral range.

Many results from MW04 are similar to both MW01R and MW02R. The DO was low, and the ORP was negative (compared to the positive result from the last event). The ORP results from previous measurements at MW04 were negative. The alkalinity and carbon dioxide concentrations were high. similar to MW01R, but the ferrous iron concentration was about one half of the value from MW01R. No sulfide was detected, and the sulfate concentration was less than the concentration in MW02R but greater than the concentration in MW01R. The pH was in the neutral range, but higher than the last event. These results are more straightforward than the results from the last event. The negative ORP, low DO, and high ferrous iron concentration suggest anaerobic activity. However, like the last event, no sulfide was detected. The low sulfate concentration suggests less influence from off-site. As noted in the Removal Action Completion Report, the results of soil samples collected at the border of the site suggest that the adjacent property could be a source of organic contaminants.

#### **CONCLUSIONS AND RECOMMENDATIONS**

Concentrations of PAHs and metals were less than USEPA and MDEQ criteria during this sampling event. PAH concentrations were less than detection limits in all wells. The arsenic concentrations in MW01R and MW02R were similar to the last event, but the arsenic concentrations in MW04 increased significantly compared to the last event and the 2011/2012 results. The results of the geochemistry field measurements are still inconclusive, and the results from future events may allow for better evaluation. Quarterly monitoring will be continued as planned.

Should you have any questions, please contact the Project Manager, Mr. Joseph Logan at (412) 921-7231 or me at (412) 921-8415.

Very truly yours.

Roger A. Clark, Ph.D. Program Manager

**RAC** 

CC: file 112G02435

Joseph Logan

TABLE 1

#### WATER LEVEL MEASUREMENTS QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT **USCG ATWATER FACILITY** DETROIT, MICHIGAN

	Ground	Top of	Screene	d Interval	6/6/2	2011	9/14/	/2011	12/10	6/2011	3/6/	2012	6/25	/2013	9/17	/2013
Well ID	Surface Elevation (feet, NAVD 88)	Top of Casing (feet, NAVD 88)	Top (feet bgs)	Bottom (feet bgs)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)
MW01	579.58	579.53	3.0	13.0	2.22	577.31	1.70	577.83	1.00	578.53	1.43	578.10	ABAN	-	ABAN	-
MW01R	579.69	579.49	3.0	13.0	-	-	-		-			-	2.63	576.86	4.02	575.47
MW02	579.54	579.62	3.0	13.0	3.95	575.67	3.32	576.30	3.20	576.42	3.42	576.20	ABAN		ABAN	
MW02R	579.07	578.83	3.0	13.0	-	-	-	-	-	-	•	-	2.67	576.16	3.42	575.41
MW03	579.33	579.00	3.0	13.0	3.89	575.11	3.94	575.06	4.08	574.92	4.26	574.74	ABAN	-	ABAN	
MW04	578.68	578.11	3.0	13.0	3.18	574.93	3.05	575.06	2.49	575.62	3.30	574.81	3.58	574.53	3.80	574.31
River Level	578.69	NA	NA	NA	3.85	574.84	4.50	574.19	4.20	574.49	4.78	573.91	NM	NM	4.95	573.74

Notes:

bgs - below ground ABAN - Abandoned.

BTOC - below top of casing.

NA - Not Applicable.

NAVD - North American Vertical Datum.

NM - Not measured.

## SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 1 OF 4

LOCATION					PAGE 1		W01		1	DAM	WO1R	
SAMPLE DATE	FEDERAL	Michigan	Michigan	Selected	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013	6/25/2013-D		9/17/2013-D
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)		13	13	13	13	13	13:	13	13
DISSOLVED METALS (UG/L)							. :		10	;		
ARSENIC	10	10	10	10	0.95 J	0.73 J	0.36 J	0.6 J	5	4.9	2.8	3.1
BARIUM	2000	2000	670	2000	190 J	300	260	250	300	290	300 J	320 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.14 J	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
CHROMIUM	100	100	100	100	0.3 J	0.27 J	1 U	1 U	0.71 U	0.86 U	0.38 J	0.4 J
COPPER	1300	1000	13	1300	0.44 J	0.61 J	0.28 J	1 U	0.73 J	0.55 J	0.94 J	0.78 J
LEAD	15	2	14	15	0.17 J	0.18 J	1 U	1 UJ	0.56 J	0.41 J	0.5 U	0.5 U
SELENIUM	50	50	5	50	5 UJ	1.1 J	5 U	5 U	1 U	1 U	1 U	1 U
ZINC	NC	2400	170	2400	5.5	6.7	6.5 U	10 U	7 J	2.9 J	2.9 J	4.5 J
METALS (UG/L)					:	-			a-000a-		*	
ARSENIC	10	10	10	10	1.5 J	1 J	0.52 J	0.63 J	4.6	5.1	3.2	3.5
BARIUM	2000	2000	670	2000	210	300	260	240	290	300	310 J	310 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.79 J	0.06 J	0.044 J	0.04 J	0.039 J	0.1 U
CHROMIUM	100	100	100	100	0.31 J	0.25 J	0.57 J	1 U	0.54 J	0.54 J	0.5 J	0.46 J
COPPER	1300	1000	13	1300	0.74 J	0.79 J	0.98 J	1 U	0.71 J	0.81 J	0.9 J	0.42 J
LEAD	15	2	14	15	0.73 J	1	0.63 J	0.26 J	2	2.1	0.15 J	0.5 U
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	5 U	0.69 U	1 U	1 U	1 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.055 J	0.1 U
ZINC	NC	2400	170	2400	6.9 J	9.4	10	_ 4 J	2.7 J	4.7 J	4.5 J	5.2 J
POLYNUCLEAR AROMATIC HYDR	OCARBON	S (UG/L)		annovous .	***************************************	Marana, i	4 94 1		dama de	* * * * * * * * * * * * * * * * * * * *	**	
2-METHYLNAPHTHALENE	NC	260	19	260	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	0.5 U	0.031 J	0.5 U	0.03 J	0.054 U	0.05 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.051 J	0.06 J	0.11 U	0.1 U	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ĮD.	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.1 J	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.041 J	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	0.5 U	0.5 U	0.5 U	0.04 J	0.054 U	0.05 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.5 U_	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

## SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 2 OF 4

LOCATION	1				PAGE 2	. 01 4	DAM	W02	·		DAM	WASP
SAMPLE DATE	FEDERAL	Michigan	Michigan	Selected	6/6/2011	9/14/2011	12/16/2011	12/16/2011-	3/6/2012	3/6/2012-D	6/25/2013	9/17/2013
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)		13	13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)	1.		<del></del>		1	<u> </u>		10	į	1 1;	10	10
ARSENIC	10	10	10	10	1 J	9	9.3	9.2	12	12	0.55 J	1.5
BARIUM	2000	2000	670	2000	200 J	150	110	100	87	89	100	77 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.058 J	0.046 J	0.2 U	0.2 U	0.1 U	0.1 U
CHROMIUM	100	100	100	100	0.47 J	0.45 J	0.36 J	0.37 J	1 U	1 U	0.79 U	0.27 J
COPPER	1300	1000	13	1300	0.42 J	0.16 J	1 U	0.28 J	1 U	1 U	1.3	0.8 J
LEAD	15	2	14	15	0.2 J	1 U	1 U	1 U	1 UJ	1 UJ	0.5 U	0.5 U
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	5 U	0.39 J	1.3 J	1.4 U	1 U
ZINC	NC	2400	170	2400	5 U	5 U	6.9 U	7.8 U	10 U	10 U	3.7 J	5.7 J
METALS (UG/L)					ĺ		A distance of the second	. December 1	\$ 100,	, chi yang	A CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR	
ARSENIC	10	10	10	10	6.2	- 12	9.5	10	14	14	0.58 J	1.4
BARIUM	2000	2000	670	2000	150	160	110	110	86	84	110	75 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.73 J	0.054 J	0.1 J	0.11 J	0.042 J	0.1 U
CHROMIUM	100	100	100	100	0.33 J	0.51 J	0.39 J	0.38 J	1 U	1.3 U	0.98 J	0.22 J
COPPER	1300	1000	13	1300	1.2	0.29 J	0.19 J	0.39 J	1 U	1 U	1.3	0.8 J
LEAD	15	2	14	15	0.85 J	0.39 J	0.16 J	0.23 J	1 U	1 U	0.5 U	0.5 U
SELENIUM	50	50	5	50	1 J	1.5 J	5 U	5 U	5 U	0.55 J	1 U	1 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	3.9 J	6.4	8.6	10	7.6 J	3.2 J	2.8 J	4.8 J
POLYNUCLEAR AROMATIC HYDR							******		and water	quadrie : .		vihanada
2-METHYLNAPHTHALENE	NC	260	19	260	24 J	43	42	33	50	49	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	6 J	14	10	7.7 J	6.9	6.6	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	1.7 J	3.8 J	3.7 J	2.6 J	3.9 J	3.7 J	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	3.8 J	4.8 J	3.1 J	2.2 J	6.3	4.6 J	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.28 J	1.3 J	1.2 J	10 U	0.92 J	0.72 J	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 UJ	1 J	10 U	10 U	5_U	5 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC	11	NC	1	0.05 J	12 U	10 U	10 U	0.41 J	5 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.1 J	12 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.52 J	1.5 J	1 J	0.81 J	0.92 J	0.82 J	0.1 U	0.1 U
FLUORENE	NC	880	12	880	3.5 J	13	24	19	21	21	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	120	170	170	130	180	180	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	8.8 J	11 J	11	8.3 J	12	12	0.1 U	0.1 U
PYRENE	NC NC	140	ID	140	0.39 J	1.5 J	1 J	10 U	0.92 J	0.82 J	0.1 U	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

## SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

#### PAGE 3 OF 4

LOCATION			<del></del>	PAGE 3	UF 4	<del></del>				
LOCATION	FEDERAL	Michigan	Michigan	Selected	61610044	0/0/0044 D		W03	40/40/0044	0/0/0040
SAMPLE DATE		Residential	GSI RBSL	(	6/6/2011	6/6/2011-D	9/14/2011	9/14/2011-D	12/16/2011	3/6/2012
TOP OF SCREEN, FEET bgs	MCL	RBSL	(1)	Criteria	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		L			13	13	13	13	13	13
DISSOLVED METALS (UG/L)	T							-	1	
ARSENIC	10	10	10	10	2.7 J	2.7 J	4.3 J	4.1 J	1.3 J	0.71 J
BARIUM	2000	2000	670	2000	310 J	300 J	370	360	310	270
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHROMIUM	100	100	100	100	0.21 J	_ 1 U	0.22 J	0.23 J	1 U	1 U
COPPER	1300	1000_	13	1300	1 U	1 U	1 U	0.15 J	0.25 J	1 U
LEAD	15	2	14	15	1 U	1 U	1 U	1 U	1 U	1 UJ
SELENIUM	50_	50	5	50	5 UJ	5 UJ	0.97 J	0.96 J	5 U	5 U
ZINC	NC	2400	170	2400	4.2 J	3.9 J	5.5	5 U	7.7 U	10 U
METALS (UG/L)										
ARSENIC	10	10	10	10	2.6 J	2.5 J	4.8 J	4.4 J	1.3 J	0.75 J
BARIUM	2000	2000	670	2000	290	290	370	340	300	270
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.37 U	1.1 J	0.051 J	0.2 U
CHROMIUM	100	100	100	100	0.29 J	0.27 J	0.24 J	0.24 J	0.22 J	1 U
COPPER	1300	1000	13	1300	0.77 J	1 U	0.3 J	0.37 J	0.39 J	1 U
LEAD	15	2	14	15	0.47 J	0.33 J	0.7 J	0.57 J	1.2	0.18 J
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 Ü
ZINC	NC	2400	170	2400	8.5 J	4.6 J	10	8.4	8.4	2 J
POLYNUCLEAR AROMATIC HYDR	ROCARBON	S (UG/L)			- Andrews		Afficient or	a sometime of	1	
2-METHYLNAPHTHALENE	NC	260	19	260	0.07 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ACENAPHTHENE	NC	1300	38	1300	1.6	1.6	2.6	2.9	1.5	1.6
ACENAPHTHYLENE	NC	52	ID	52	0.05 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ANTHRACENE	NC	43	ID	43	0.22 J	0.19 J	0.23 J	0.23 J	0.092 J	0.13 J
BENZO(A)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.072 J	0.051 J	0.041 J	0.051 J
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.052 J	0.5 U	0.5 U	0.5 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.082 J
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
FLUORANTHENE	NC	210	1.6	210	0.2 J	0.15 J	0.27 J	0.23 J	0.11 J	0.11 J
FLUORENE	NC	880	12	880	0.36 J	0.27 J	0.19 J	0.28 J	0.13 J	0.13 J
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.14 J
NAPHTHALENE	NC	520	11	520	0.19 J	0.11 J	0.062 J	0.5 U	0.5 U	0.5 U
PHENANTHRENE	NC	52	2	52	1.2	1	1.4	1.5	0.6	0.67
PYRENE	NC	140	ID	140	0.15 J	0.13 J	0.23 J	0.24 J	0.1 J	0.082 J

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

## SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 4 OF 4

LOCATION	_		24.11	PAGE 4	01 4		DAM	W04		<del> :</del> -
SAMPLE DATE	FEDERAL	Michigan	Michigan	Selected	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013	9/17/2013
TOP OF SCREEN, FEET bgs	MCL.	Residential	GSI RBSL	Criteria	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)		13	13	13	13	13	13
DISSOLVED METALS (UG/L)	·	·			1		į			
ARSENIC	10	10	10	10	3 J	3.6 J	1.2 J	0.84 J	1.9	7
BARIUM	2000	2000	670	2000	150 J	210	130	130	190	190 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.2 U	0.19 J	0.31	0.1 U
CHROMIUM	100	100	100	100	1 U	1 U	0.23 J	1 U	0.83 U	0.5 U
COPPER	1300	1000	13	1300	0.88 J	0.6 J	0.32 J	1 U	1.9	0.44 J
LEAD	15	2	14	15	0.44 J	0.45 J	0.17 J	2.8 J	3	1.2
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	0.73 J	2.6	1 U
ZINC	NC	2400	170	2400	110	100	100	140	180	94 J
METALS (UG/L)										
ARSENIC	10	10	10	10	3 J	3.8 J	1.1 J	0.87 J	1.4	7.3
BARIUM	2000	2000	670	2000	150	210	130	130	190	190 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.091 J	0.25	0.34	0.1 U
CHROMIUM	100	100	100	100	0.36 J	1 U	1 U	1 U	0.71 J	0.21 J
COPPER	1300	1000	13	1300	2.6	1.8	0.64 J	1 U	1.4	0.45 J
LEAD	15	2	14	15	2.1	3.3	1.8	2.8	3.8	2.4
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	0.79 J	4.9	1 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	110 J	120	110	150	190	99 J
POLYNUCLEAR AROMATIC HYDR						<u> </u>			!	
2-METHYLNAPHTHALENE	NC	260	19	260	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	0.05 J	0.03 J	0.5 U	0.5 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.19 J	0.5 U	0.062 J	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.24 J	0.5 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.22 J	0.5 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC .	1	NC	1	0.5 U	0.5 U	0.27 J	0.5 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.22 J	0.5 U	0.052 J	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.5 U	0.5 U	0.04 J	0.5 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	0.05 J	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	0.05 J	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.04 J	0.5 U	0.061 J	0.5 U	0.1 U	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

# SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 1 OF 3

LOCATION		DAMW01R							
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13 clear			
Appearance	clear	clear	clear	clear	clear				
Purge Meter Measurements									
pH (SU)	6.8	6.5	6.8	7.0	7.0	6.6			
Specific Conductivity (mS/cm)	0.992	1.04	1.08	1.02	0.922	1.13			
Temperature (°C)	18.4	20.3	9.5	7.0	19.3	19.3			
Turbidity (NTU)	0.0	0.0	8.8	5.1	7.4	1.0			
Dissolved Oxygen (mg/L)	0.0	0.26	0.0	2.08	0.38	0.39			
ORP (mV)	-176	-158	-204	-98	-84	-122			
Field Test Kits			_						
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	0.9	0.7			
Alkalinity (ppm)	NM	NM	NM	NM	375	350			
Carbon Dioxide (ppm)	NM	NM	NM	NM	75	85			
Ferrous Iron (ppm)	NM	NM	NM	NM	. 1.4	2.3			
Sulfide (ppm)	NM	NM	NM	NM	0.05	0.9			
Sulfate (ppm)	NM	NM	NM	NM	51	8			

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

### SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT USCG ATWATER FACILITY

#### DETROIT, MICHIGAN PAGE 2 OF 3

LOCATION		DAN	DAMW02R							
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13				
Appearance	clear	clear	clear	clear	clear	clear				
				w/black						
				specks						
Purge Meter Measurements										
pH (SU)	7.7	7.3	7.6	8.1	7.3	7.8				
Specific Conductivity (mS/cm)	1.49	1.38	1.48	1.27	0.554	0.564				
Temperature (°C)	12.5	19.0	10.4	8.8	20.1	18.1				
Turbidity (NTU)	0.0	1.7	1.2	1.5	3.2	0.0				
Dissolved Oxygen (mg/L)	0.0	0.37	0.0	1.55	1.51	0.47				
ORP (mV)	-192	-297	-294	-255	43	-28				
Field Test Kits										
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	2.7	1.5				
Alkalinity (ppm)	NM	NM	NM	NM	180	500				
Carbon Dioxide (ppm)	NM	NM	NM	NM	26	25				
Ferrous Iron (ppm)	NM	NM	NM	NM	0	0.1				
Sulfide (ppm)	NM	NM	NM	NM	0	0				
Sulfate (ppm)	NM	NM	NM	NM	31	37				

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

# SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR SEPTEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 3 OF 3

LOCATION	DAMW03				DAMW04					
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13
Appearance	clear	clear	clear	clear	clear	clear	clear	clear	clear	clear
				-						
Purge Meter Measurements										L
pH (SU)	7.2	6.7	6.5	7.2	7.3	6.7	6.7	7.1	6.9	7.3
Specific Conductivity (mS/cm)	0.925	0.99	1.06	0.992	0.694	0.863	0.71	0.664	0.772	0.794
Temperature (°C)	12.5	21.8	10.6	8.8	16.1	22.8	11.0	8.4	16.7	20.8
Turbidity (NTU)	0.7	1.3	4.5	0.5	1.7	0.0	3.6	0	0	0
Dissolved Oxygen (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.48	0.47
ORP (mV)	-107	-92	-74	-123	-53	-21	-24	-15	64	-46
Fleid Test Kits	Field Test Kits									
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	NM	NM	NM	NM	1	0.7
Alkalinity (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	400	360
Carbon Dioxide (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	60	75
Ferrous Iron (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	0.4	1.4
Sulfide (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	0	0
Sulfate (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	>80	26

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

FIGURE

ATTACHMENT A
SAMPLING FIELD FORMS

#### **GROUNDWATER SAMPLE LOG SHEET**

<b>-</b>	Tt	Tetra	Tech	inc.
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Event:

Quarterly GW Monitoring

Project Site Name:

Detroit - Atwater

Project No.: 112G02435 Sample ID: DA-MW01R-0913 Sampled By: T. ROJAHN DA-FD-0917/3 09/17/13 QA/QC Duplicate ID: Sample Date: MS/MSD Collected: NO Sample Time: 1415 YES WELL'INFORMATION: Well ID: MW01R 09/17/13 **Purge Date:** Well Diameter (in): 4.02 Static Water Level (ft-BTOR): 3 Top of Screen (ft-BTOR): PID Monitor Reading: Bottom of Screen (ft-BTOR): 13 Purge Method: Peristaltic Pump Total Well Depth (ft-BTOR): Sample Method: Peristaltic Pump EQUIPMENT INFORMATION: HORIBA 4-52 Water Quality Instrument: Pump Controller: PEGASUS **Turbidity Meter:** PURGE DATA: H²0 Level DO Time Flow Color рΗ S.C. Turbidity Temp. ORP Salinity (Hrs) (ft-BTOA) mL/min. (S.U.) (mS/cm) (mg/L) (NTU) (C°) (mV) (% or ppt)) Start 1315 4.02 CLEAR _ 0 Pulsé CLEAR 6.56 1.27 0.59 0.0 1325 *15*0 18.89 -83 4.44 0.6 1500m l 1335 CLEAR 150 6.53 1.15 0.43 0.0 - 96 19.14 4.58 0.6 *3*0000 0.40 1345 4.68 150 CLEAR 6.55 1.13 0.3 19.32 -104 0.6 4500 6000 150 CLEAR 6.59 1.15 2.1 480 0.45 19.30 - i1Z 0.6 1.355 CLEAR 6.59 1.14 0.43 6750 1400 150 1.5 -121 4.83 19.30 0.6 19.29 1405 6.59 0.40 -123 486 150 CLEAR んノろ i. Ž 0.6 7500 1410 4.88 150 CLEAR 6.60 1.13 0.39 1.0 -122 0.6 8250 19.29 1415 SAMPLÉ FINAL PURGE SAMPLE DATA: Salinity Total Total Vol S.C. DO Turbidity Other Temp. (gal. (L.)) (S.U.) (mS/cm) (mg/L) (C°) Purge Purge (min.) (NTU) (mV) (% or ppt) 6.60 1315 1410 55 1.13 0.39 19.29 -122 8.3 ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS Analysis Method Preservative Number Vol. **Bottle Type** Collected 4" C **PAHs** See lab Spec 2 11 Amber Glass V V Total Metals **HN03** 250 ml See lab Spec 1 Plastic ~ HN03 **Dissolved Metals** See lab Spec 250 ml **Plastic** OBSERVATIONS (NOTES: Coordinates: N Signature(s): Ε Tous lossin



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS,	Inc.					·		Page Z of 3	3
Project Site I	Name:	USCG De	troit_			Sample ID N	o.: DA -/	MWOIR-	0913
Project No.:	·.	112G0243	35	-		Sample Loca			
Sampled By:						Duplicate:			
Field Analyst		<u> </u>	<del></del>	-		Blank:	$\overline{\Box}$		
	hecked as per C	QA/QC Che	cklist (initi	als):	TR	]			
	<b>A</b> ideadh na Cairde					āljubtelndridgi (4)(b	idiliza iranifedhinin		
Date: 09-17		Color	рН	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 141		(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	ppt (94)	(+/- mv)
Method: Pers		CLEAR	6.60	1.13	19.29	1.0	0.39	0.6	-122
SAMPLE COLLE	CTION/ANALYSIS I								
ORP (Eh) (+/-	mv)		Electrode I	Make & Mod	del:				
	•		Reference	Electrode (	circle one): S	Silver-Silver Chloric	de / Caiomel	/ Hydrogen	
Dissolved Ox	ygen:								
Equipment Chem		•				Concentration:	0.7	ррт	
<u> </u>	<del></del>	<del></del>	1_		1			• · ·	
Range Used:	Range	Method	Concentrat		ł	A =	1420		
	0 to 1 ppm	K-7501	0.7	<u>/</u>	1	Analysis Time:	1467	-	
<u> </u>	1 to 12 ppm	K-7512	L	·	]				•
Notes:	<del></del>				<del></del>			<del></del>	
Alkalinity:			•				a.ca		
Equipment: Chem	netrics Test Kit					Concentration:	350	_ppm	
The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	T		10	*	1				
Range Used:	Range	Method	Concentrat	ion ppm	ł	Analysis Time:	:513		
	10 to 100 ppm	K-9810	30	-	1	Analysis Time:	73.0	-	
<del>                                     </del>	50 to 500 ppm	K-9815	35		1	•		<b></b>	. —
Notes	100 to 1000 ppm	K-9820	<del>!</del>	· · ·	1			Filtered	i;
Notes:	<u> </u>								
Carbon Dioxi						Concentration:	85		
Equipment: Chem	ietrics l'est kit					Concentration.		ppm	
Range Used:	Range	Method	Concentrat	ion nam	1	Analysis Time:	1517		
10	10 to 100 ppm	K-1910		5		, and you		-	
	100 to 1000 ppm	K-1920	<u> </u>	<del></del>	1				
	250 to 2500 ppm	K-1925	<del> </del>		1				
Notes:	1 200 to 2000 ppill	11,1020	<del></del>		•				
Ferrous Iron	(Fe ²⁺ )·	<del></del>						<del></del>	
ſ		alar (Afac-)	Range: 0 -	10 ma#		Concentration:	23	ppm	
Equipment:	HACH IR-18C C	OIOI VVIISEI	range: U -	io ingr		JUNCHINATION.		· PPIII	
						Applicate To	IT AT		
l '						Analysis Time:	1507	• 	
	Notes: Filtered: L								
Sulfide (S ² ):				•			a 0		
Equipment: Chem	etrics Test Kit	,	<del>,</del>		1	Concentration:	<i>U.</i> 7	ppm	
Range Usted:	Range	Method	Concentrat	ion ppm	J			•	]
V	0 to 1 ppm	K-9510	U.	9		Analysis Time:	i442	_	
	1 to 10 ppm	K-9510			1			-	
Notos:					•				1



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 3 of 3 Tetra Tech NUS, Inc. Sample ID No.: DA -MWOIR-0913 Project Site Name: **USCG Detroit** 112G02435 Sample Location: DA - MWOIR Project No.: Duplicate: Sampled By: T. ROJAHN Field Analyst: Blank: Sulfate (SO₄2-): Equipment: HACH DR/890 Range: 0 - 0.70 mg/L Concentration: Program/Module: 92 Analysis Time: 14:24 Filter: Notes: QA/QC Checklist: 凹 All data fields have been completed as necessary: Correct measurement units are cited in the SAMPLING DATA block: Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet. Final calulated concentration is within the appropriate Range Used block:

Title block on each page of form is initialized by person who performed this QA/QC Checklist:

# **GROUNDWATER SAMPLE LOG SHEET**

	Totro Te	-áb Ino				E		Quartariu	CVAL & Applie		
IT	Tetra Te	Cn inc.				Event:		Quarterly		ring	
					•	-	ite Name:	Detroit - A			
	·					Project N	0.:	112G0243	35	- ·	
Sample II	Ď:	DA-MW02	2R-0913	•		Sampled	Ву:	MARK	MENLE	7_	
QA/QC D	uplicate ID:					Sample D	)ate:	09/17/13	 - <u>-</u>		
	Collected:		(NO)			Sample T		1420			
WELL INF	ORMATION			在特殊財	17年 中国 1813	都是美洲	遭疾力则	<b>的工作的</b>	小山西洋山地	一种的概念生	<b>通门的</b> (产)
Well ID:	-MW01R	MWOZR				Purge Da		09/17/13			
Well Dian	meter (in):	2"				Static Wa	iter Level (f		3.42		
Top of Sc	creen (ft-BT)	OR):	3'	•			tor Reading				
	of Screen (ft-		13			Purge Me		Peristaltic			
	ll Depth (ft-E	— ن	13'			Sample N		Peristaltic			
EQUIPME	NT INFORM	ATION:	<b>小性类类</b>	<b>4-2-4</b> 4				4-2-5-4-6	- MAR THAN MAN TO THE PARTY		<b>建筑型地位</b>
	uality instrur	ment: Hos	21BA - UZ	22 - US	8312 X	Pump Co	ntroller: 🔑	ELASUS	- 116	7112X	
Turbidity	Meter:	HORIBA	1 022 -	- U583	12 X		* *		U		
PURGE DA	ATA: THE PARTY		於開催。在	<b>对于</b>	The same of the same	STATE WE	<b>成门,大学的</b> 种	100	and the first	THE WAST	<b>海里</b>
Time	H ² 0 Level		Color	pН	S.C.	DO	Turbidity	Temp.	ORP	Salinity	Other
(Hrs)	(ft-BTOR)	ml. / min.	<del> </del> _	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% o(ppt)	· · · · · · · · · · · · · · · · · · ·
1315	3.56	160	CICAR	7.39	1.18	0.89	3.0	16.53	-7	0.6	<u> </u>
1325	3.72	140	CICAR	7.35	0.640	0.65	0.1	16.87	-8	0.0	<u> </u>
1335	3.80	160	CICAR	7.63	0.559	0.60	0	17-69	-17	0.3	<u> </u>
1345	3.84	160	CICAR	7.78	0.547	0.55	0	17.83	-18	0-3	
1355	3.41	160	CICAR	7.79	0.557	0.48	0	18.01	-23	0.3	
1405	3.94	160	CICAR	7.81	0.564	0.48	0	18:08	-26	0.3	
1415	3.95	160	CICAR	7.82	0.564	0.47	0	18.08	-28	0.3	
	1								-		
	<b> </b>	1									
	<del>                                     </del>	<u> </u>	<b></b>					<del>                                     </del>			
	<del>                                     </del>	<b>——</b>			<del>                                     </del>	<del> </del>					
FINAL PUF	RGE / SAMP	LE DATA:	No. of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of			as some we					
Start	End	Total	Total Vol.	рН	S.C.	DO	Turbidity	Temp.	ORP	Salinity	Other
Purge	Purge	(min.)	(gal. / L.)	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)	
1315	1415	60	9.6	7.82	0.564	0.47	0	18.08	-28	0.3	
ANALYSIS	PRESERY	ATION AND	BOTTLER	EQUIRMEN	NTS WEETE	<b>种类型型</b>	· · · · · · · · · · · · · ·	學的學術的	是是是是	學是非形式	學學學
Ana	iysis		Method		Preserv		Number	Vol.	Bottle 1		Collected
P#	AHs		See lab Spe	3C	4°	· C	2	1 L	Ambe	r Glass	~
Total	Metals	<u> </u>	See lab Spe	ec	HN	V03	1	250 ml	Pla	stic	u
Dissolve	ed Metals		See lab Spe	C	HN	103	1	250 ml	Pla	stic	س
<del></del>	7.11										
			<del></del>								
					·				-		
····		<del></del>									
· - ·	<del></del>				<del>                                     </del>	<del>'</del>			<del>-</del>		<del></del>
OBSERVA	TIONS / NO	TES:	<b>建设有模型的</b> 自由。		16.00	程建立政府是	The state that the state		<b>建</b> 机的人的 建设	OCCUPATION OF	
<u> </u>	110110 , , 1 -	A CONTRACTOR OF THE PERSON	Hart Marie William - Marie -	MARKET CONTRACTOR OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY	A TEXTURES CONT.	ADDOC SOUTH OF ASSESSED	e Egypter in general	the second	STORE CONTRACTOR	my and recent re-	Comments to the we
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l .											

Coordinates:

Signature(s): Mark & Menoul



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS,	Inc.					<del></del>		Page ∠of	<u> </u>
Project Site I	Name:	USCG De	troit			Sample ID N	o.: DA-N	1WOZR~	0913
Project No.:		112G0243	5	_		Sample Loca	**		
Sampled By:	MM			_		Duplicate:			
Field Analysi	t: TR			_		Blank:			
	hecked as per C	A/QC Che	cklist (initi	als):	TR				
SAMPLING DATA	A: Objection and the little	liet folklijgerdich	alicajajijikiji	igneralianer	ig gilaailum:		(Bandindi: Gill)	Equipment of the	Phardifeddill
Date: 9-15	1-13	Color	pН	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: (d	20	(Visual)	(S.U.)	(mS/cm)	(°C)	(עזע)	(mg/l)	ppt (94)	(+/- mv)
Method: PER		CLEAR	7.82	0.564	18.08	0	0.47	0.3	- 28
	CTION/ANALYSIS	NFORMATIO	N: Helling	genijerjeki, h	Him/Ainchilli			tulillijoinjigius ()	Picalbally.
ORP (Eh) (+/-	· mv)		Electrode I	Make & Mod	del:	<del></del>			
			Reference	Electrode (	circle one):	Silver-Silver Chlori	de / Catomel	/ Hydrogen	
Dissolved Ox	rygen:							<u></u>	
Equipment: Chem	netrics Test Kit					Concentration:	/.ɔ	_ ppm	
Range Used:	Range	Method	Concentra	tion pom	1		•		
T.	0 to 1 ppm	K-7501	>/		1	Analysis Time:	1543		
	1 to 12 ppm	K-7512	1.5	5	1		<u></u>	_	
		1 22.7.							
Notes:									
Alkalinity:							•		
Equipment: Chem	netrics Test Kit		•			Concentration:	200	_ppm	
Range Used:	Range	Method	Concentra	tion ppm	]	·			
	10 to 100 ppm	K-9810			1	Analysis Time:	1553	3	
	50 to 500 ppm	K-9815	7	00	]				
	100 to 1000 ppm	K-9820			]			Filtere	d: 🗆
Notes:									
Carbon Dioxi	ide:				-				
Equipment: Chem	netrics Test Kit					Concentration:	_25	_ppm	
Range Used:	Range	Method	Concentra	tion ppm	]	Analysis Time:	1558		
4	10 to 100 ppm	K-1910	2	.5	]			_	
	100 to 1000 ppm	K-1920							
	250 to 2500 ppm	K-1925			]				
Notes:									
Ferrous Iron	(Fe ²⁺ ):		<del></del>						
Equipment	HACH IR-18C C	Color Wheel	Range: 0 -	10 mg/L		Concentration:	٧.١	_ppm	
							1550		
						Analysis Time:	7550	<del></del>	
Notes:								Filtere	<u>d: [</u>
Sulfide (S ² ):									
Equipment: Chem	netrics Test Kit	,			7	Concentration:	_ <u></u>	_ppm	
Range Used:	Range	Method	Concentrat	tion ppm	1				
$\square$	0 to 1 ppm	K-9510	0	)		Analysis Time:	1542	_	
	1 to 10 ppm	K-9510		<u> </u>	]				
Notes:					_				



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.	Page 9 of 3					
Project Site Name: USCG Detroit	Sample ID No .: D4-MK/02R - 09/3					
Project No.: 112G02435	Sample Location: DA - MWOZR					
Sampled By: T MM	Duplicate:					
Field Analyst: TR	Blank:					
Sulfate (SO ₄ ² ):						
Equipment: HACH DR/890 Range: 0 - 0.70 mg/L	Concentration: 37 ppm					
Program/Module: 92						
	Analysis Time: _/534					
Notes:	Filter:					
QA/QC Checklist:						
All data fields have been completed as necessary:						
Correct measurement units are cited in the SAMPLING DATA	A block:					
Values cited in the SAMPLING DATA block are consistent wit	th the Groundwater Sample Log Sheet:					
Final calulated concentration is within the appropriate Range	Used block:					
Title block on each page of form is initialized by person who p	erformed this QA/QC Checklist:					

# **GROUNDWATER SAMPLE LOG SHEET**

TŁ.	Tetra Tech	inc.

Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.:

112G02435

Sample By:   DAAWOANTOR:												
Well Depth (R-BTOR)	Sample II	Ď:	DA-MW04	<b>#</b> -0913			<del></del>			·		
Well Disable (n): 2"   Static Water Level (R-BTOR):   O9/17/13   Static Water Level (R-BTOR):   O9/17/13   Static Water Level (R-BTOR):   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/17/13   O9/	QA/QC D	uplicate ID:			·				09/17/13			
Well Diameter (in): 2"   Static Water Level (ft-BTOR): Top of Screen (ft-BTOR): 3   Plug Method: Peristatic Pump	MS/MSD	Collected:	YES	NO			_					
Static Water Level (h-BTOR): 3' PID Monitor Reading: 3-80	WELL INF	ORMATION:	上於。國際問題	者が表現を	是不是大利的	<b>建工业的</b>	THE PERSON	A Comment	<b>企业从自6条件</b>	经制度的	份的建立。宣	の関係を
Top of Screen (R-BTOR): 3	Well ID:	-MW91R	MWOY				Purge Da	te:	09/17/13			
Bottom of Screen (R-BTOR): 13	Well Dian	neter (in):	2"				Static Water Level (ft-BTOR):					
Total Well Depth (HSTOR)   13'   Sample Method:   Peristatic Pump	Top of Sc	reen (ft-BT	OR):	3'								
### Red Coality Instrument: ### ADIAB U22 — U587(2) ### Pump Controller: #### ADIAB U22 — U587(2) ### Pump Controller: ####################################	Bottom o	f Screen (ft-	BTOR):	13			Purge Me	thod:	Peristaltic	Pump		
Water Quality Instrument:   HoRIBA   D22 - U58 3 72 x   Pump Controller:   DELASUS - U77   12 x	Total Wel	ll Depth (ft-E	STOR):	13'								
Turbidity Meter: #66/45/ U22 - U58 3/2 x  PURGE DATA: Flow (H8TCH)   H9 Lovel   Flow (L91)   S.C. (M5Cm)   (M7U)   Turbidity   Temp. (M7U)   (M6Cm)   M1 / min.   M19 Lovel   Flow (L91)   M1 / min.   M19 Lovel   Flow (L91)   M1 / min.   M19 Lovel   Flow (L91)   M1 / min.   M19 Lovel   Flow (L91)   M1 / min.   M19 Lovel   Flow (L91)   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M19   M	EQUIPME	NT INFORM	ATION:	<b>然的种种</b>	的。如此的情况	A STATE	馬索里里	<b>建建。据</b>	<b>建设施</b> 。前	e de la company	到的特別是	<b>新教育教育</b>
Time	Water Qu	ality instrur	nent: Ho	RIBA VZ	22 - US	8312X	Pump Co	ntroller:	OEGASU	5 - U	27/12 X	
Time	Turbidity	Meter:	HORISA	U22 -	- 058	3 /2 X						
(H-STOR) IN. / min. (S.U.) (mS/m) (mg/L) (NTU) (C) (mV) (% o(GE))  // 4/40 3.90 200 closely 7.42 0.786 i.19 10.5 19.58 -26 0.4 1/50 4/17 200 closely 7.42 0.786 0.71 4/7 20.20 -30 0.4 1/500 4/40 200 closely 7.30 0.787 0.58 0 20.72 -37 0.4 1/500 4/40 200 closely 7.26 0.793 0.58 0 20.99 4.2 0.4 1/510 4/53 200 closely 7.26 0.793 0.50 0 21.02 -43 0/4 1/530 4/.77 200 closely 7.27 0.793 0.50 0 21.02 -43 0/4 1/530 4/.77 200 closely 7.29 0.793 0.49 0 21.04 -44 0.4 1/530 4/.77 200 closely 7.29 0.794 0.47 0 20.95 -46 0.4 1/530 4/.75 200 closely 7.29 0.794 0.47 0 20.95 -46 0.4 1/530 4/.75 200 closely 7.29 0.794 0.47 0 20.95 -46 0.4 1/530 4/.75 200 closely 7.29 0.794 0.47 0 20.95 -46 0.4 1/530 4/.75 200 closely 7.29 0.794 0.47 0 20.95 -46 0.4 1/530 4/.75 200 closely 7.29 0.794 0.47 0 20.95 -46 0.4 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/540 1/	PURGE DA	TALM等機	7	A SHARE WE	2 138 75 76 21	<b>大小时间</b>	<b>这种主要的</b>			<b>美国中华的</b>	是一种	<b>建</b>
1/450   4/17   200   c c a    7.46   0.786   0.71   4.7   20.20   -30   0.4     1/500   4/40   200   c c a    7.30   0.787   0.58   0   2.072   -37   0.4     1/510   4/53   200   c c a    7.27   0.793   0.50   0   2/102   -43   0.4     1/520   4/6   200   c c a    7.27   0.793   0.50   0   2/102   -43   0.4     1/530   4.77   200   c c a    7.29   0.793   0.48   0   2/104   -44   0.4     1/540   4/85   200   c c a    7.29   0.794   0.47   0   20.85   -46   0.4     1/540   4/85   200   c c a    7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540     1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540     1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540				Color								Other
1/450   4/17   200   c c a    7.46   0.786   0.71   4.7   20.20   -30   0.4     1/500   4/40   200   c c a    7.30   0.787   0.58   0   2.072   -37   0.4     1/510   4/53   200   c c a    7.27   0.793   0.50   0   2/102   -43   0.4     1/520   4/6   200   c c a    7.27   0.793   0.50   0   2/102   -43   0.4     1/530   4.77   200   c c a    7.29   0.793   0.48   0   2/104   -44   0.4     1/540   4/85   200   c c a    7.29   0.794   0.47   0   20.85   -46   0.4     1/540   4/85   200   c c a    7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   6   7.29   0.794   0.47   0   20.85   -46   0.4     1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540     1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540     1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540   1/540	1440	3.80	200	clouds	7.62	0.786	1.19	10.5	19.58	-26	0.4	
		1					0.71			-30		
S   O   4'.53   200   C CAR   7.24   0.793   0.53   O   20.89   -42   0.4     S   200   C CAR   7.27   0.793   0.50   O   2 .02   -43   0.4     S   30   4'.77   200   C CAR   7.29   0.794   0.47   O   20.85   -44   0.4     S   4'.85   200   C CAR   7.29   0.794   0.47   O   20.85   -44   0.4     S   4'.85   200   C CAR   7.29   0.794   0.47   O   20.85   -44   0.4     FINAL PURGE   SAMPLE DATA:											0.4	
S20   416   8   200   C CAR   7.27   0.793   0.50   0   2 .02   -43   0.4     S30   4.77   200   C CAR   7.29   0.794   0.49   0   2 .04   -44   0.4     S40   4.85   200   C CAR   7.29   0.794   0.47   0   20.85   -40   0.4     FINAL PURGE   SAMPLE DATA:   Start   End   Total   Total   Total   Vol.   ph   S.C.   D0   Turbidity   Temp.   ORP   Salinity   Other     Purge   Purge   (min.)   (gal./L.)   (S.U.)   (mScm)   (mgl.)   (NTU)   (C)   (mV)   (%   PPP)												
1530   4.77   200   c cAA   7.29   0.793   0.48   0   21.04   -44   0.4     1540   4.85   200   c cAA   7.29   0.794   0.47   0   20.85   -40   0.4     1540   4.85   200   c cAA   7.29   0.794   0.47   0   20.85   -40   0.4     1540   1540   60   12.0   7.29   0.794   0.47   0   20.85   -40   0.4     1540   1540   60   12.0   7.29   0.794   0.47   0   20.85   -40   0.4     1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   1540   15												
Total   Purge   SAMPLE DATA   Start   End   Total   Vol.   pH   S.C.   DO   Turbidity   Temp.   ORP   Salinity   Other   Purge   (min.)   (gal. / L.)   (S.U.)   (mSkerr)   (mpl.)   (myl.)   (C*)   (m*)   (** (** pri)   Purge   Parge   (min.)   (gal. / L.)   (S.U.)   (mSkerr)   (mpl.)   (C*)   (m*)   (** (** pri)   Purge   Parge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (min.)   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (** pri)   Purge   (s.* (**												
FINAL PURGE / SAMPLE DATA:  Start End Total Total Vol. pH S.C. DO Turbidity Temp. ORP Salinhy (myl.) (gal./L.) (S.U.) (mS/cm) (mg/L.) (NTU) (C*) (mV) (% (PPT) (MV) (% (PPT) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV												
Start End Purge (min.) (gal./L) (SU.) (mS/cm) (mg/L) (NTU) (C°) (MV) (% (PPI) (NTU) (T°) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV	1,5,5	7-23			7:21							
Start End Purge (min.) (gal./L) (SU.) (mS/cm) (mg/L) (NTU) (C°) (MV) (% (PPI) (NTU) (T°) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV												
Start End Purge (min.) (gal./L) (SU.) (mS/cm) (mg/L) (NTU) (C°) (MV) (% (PPI) (NTU) (T°) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV												
Start End Purge (min.) (gal./L) (SU.) (mS/cm) (mg/L) (NTU) (C°) (MV) (% (PPI) (NTU) (T°) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV	<del></del>					<del></del>			<u> </u>			
Start End Purge (min.) (gal./L) (SU.) (mS/cm) (mg/L) (NTU) (C°) (MV) (% (PPI) (NTU) (T°) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV		-						·				
Start End Purge (min.) (gal./L) (SU.) (mS/cm) (mg/L) (NTU) (C°) (MV) (% (PPI) (NTU) (T°) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV						-			<del></del>			
Start End Purge (min.) (gal./L) (SU.) (mS/cm) (mg/L) (NTU) (C°) (MV) (% (PPI) (NTU) (T°) (MV) (MV) (MV) (MV) (MV) (MV) (MV) (MV	FINAL PUR	RGE / SAMP	LE DATA:									11.00
1440   1540   LO   12.0   7.29   0.794   0.47   O   20.85   -46   0.49												
Analysis Method Preservative Number Vol. Bottle Type Collected PAHs See lab Spec 4° C 2 1 L Amber Glass L Total Metals See lab Spec HN03 1 250 ml Plastic L Dissolved Metals See lab Spec HN03 1 250 ml Plastic L OBSERVATIONS / NOTES:	Purge	Purge	(min.)	(gal. / L.)	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)	ī
Analysis Method Preservative Number Vol. Bottle Type Collected PAHs See lab Spec 4°C 2 1 L Amber Glass  Total Metals See lab Spec HN03 1 250 ml Plastic  Dissolved Metals See lab Spec HN03 1 250 ml Plastic   Dissolved Metals See lab Spec HN03 1 250 ml Plastic   OBSERVATIONS / NOTES:												
PAHs See lab Spec 4° C 2 1 L Amber Glass L Total Metals See lab Spec HN03 1 250 ml Plastic L Dissolved Metals See lab Spec HN03 1 250 ml Plastic L  OBSERVATIONS / NOTES:	ANALYSIS	PRESERV	ATION AND	BOTTLE	EQUIRMEN	にはいい。	語言語言	<b>有关的</b> 的最	が記録が	N. H. THE RES		THE PERSON NAMED IN
Total Metals See lab Spec HN03 1 250 ml Plastic  Dissolved Metals See lab Spec HN03 1 250 ml Plastic  OBSERVATIONS / NOTES:				Method				Number	<del></del>			Collected
Dissolved Metals See lab Spec HN03 1 250 ml Plastic   OBSERVATIONS / NOTES:	P/	\Hs		See lab Spe	C	4	, C	2	1 <u>L</u>	Ambe	r Glass	
OBSERVATIONS / NOTES:	Total	Metals		See lab Spe	<u>ic</u>	H	103	11	250 ml	Plastic		4
Coordinates:	Dissolve	ed Metals		See lab Spe	ec	HN	HN03 1		250 ml	Pla	stic	<u></u>
Coordinates: N E Signature(s):								<u> </u>			<u></u>	
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Coordinates: N E Signature(s): Mark L Manack		The complete major design is separate in the experiment of the complete and the complete major and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the complete and the compl										
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	Coord	miates;				<u> </u>	J.S. amile	m	811	Ven	//	



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS,	Inc.		<del>منت برسنی</del>			··		Page Z of 3	3
Project Site	Name:	USCG De	troit	-	_	Sample ID N	0.:DA · MH	104-09/3	
Project No.:		112G0243	5			Sample Loca	tion: DA-	MW04	
Sampled By:	MM			_	·	Duplicate:			
Field Analyst	TR			-		Blank:			
	hecked as per C	A/QC Che	cklist (initi	ials):	TR	1	_		
	Cerio di enilologia di					lancarahi abesit abi	Anhalliatannin al	lesiannia digliadi	s. y Sorippolity
Date: 9-17	1-13	Color	pН	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 154:		(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	ppt (44)	(+/- mv)
Method: PERI		CLEAR	7.29	0.794	20.85	0	0.47	0.4	-46
	CTION/ANALYSIS'I								
ORP (Eh) (+/-				Make & Mod	** *				
. (, ( )	,					ilver-Silver Chloric	de / Calomei	 / Hydrogen	
Dissolved Ox	vaen:	<del></del>						,	
Equipment: Chem		•				Concentration: Analysis Time:	0.7	ррт	
Range Used:	Range	Method	Concentra	tion pom	1		_		
पि	0 to 1 ppm	K-7501	O.			Analysis Time:	1615		Ĩ
	1 to 12 ppm	K-7512	<del>                                     </del>		}	,		•	
	, to 12 pp		<del></del>		<b>J</b>				
Notes:									ľ
Alkalinity:					<del></del>	· · · · · · · · · · · · · · · · · · ·			
Equipment Chem	etrics Test Kit					Concentration:	360	ppm	
Range Used:	Range	Method	Concentra	tion ppm			1/08		
<u> </u>	10 to 100 ppm	K-9810	ļ	·		Analysis Time:	1600		
	50 to 500 ppm	K-9815	<u></u>						_
	100 to 1000 ppm	K-9820	36	0				Filtered:	
Notes:				<u> </u>				<u> </u>	
Carbon Dioxi	de:	•	•	•			- 1		
Equipment Chem	etrics Test Kit.		•			Concentration: Analysis Time:	75	ppm	- 1
Range Used:	Range	Method	Concentrat	ion ppm		Analysis Time:	1624	_	1
	10 to 100 ppm	K-1910	7	5		•			ĺ
	100 to 1000 ppm	K-1920							
	250 to 2500 ppm	K-1925							
Notes:									
Ferrous Iron	Fe ²⁺ ):								
Equipment	HACH IR-18C C	color Wheel	Range: 0 -	10 mg/L		Concentration:	1.4	ppm	
Ì							1/21		
						Analysis Time:	1631		
Notes:	Notes: Filtered: L								
Sulfide (S²):							_		Ì
Equipment Chem	Equipment Chemetrics Test Kit					Concentration:	0	ppm	
Rånge Used:	Range	Method	Concentrat	ion ppm			-		ſ
<u>u</u>	0 to 1 ppm	K-9510				Analysis Time:	1625	•	1
	1 to 10 ppm	K-9510				•		,	
Notes:	to to ppin	13-30 10	<b>1</b>		I				- (



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 3 of 3 Tetra Tech NUS, inc. Project Site Name: **USCG Detroit** Sample ID No.: DA-MWG4-09B Project No.: 112G02435 Sample Location: Sampled By: Duplicate: Field Analyst: Blank: Sulfate (SO₄2): 26 ppm Range: 0 - 0.70 mg/L Concentration: Equipment: HACH DR/890 Program/Module: 92 Analysis Time: 16 16 Filter. Notes: QA/QC Checklist: All data fields have been completed as necessary: Correct measurement units are cited in the SAMPLING DATA block: Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: Final calulated concentration is within the appropriate Range Used block: Title block on each page of form is initialized by person who performed this QA/QC Checklist:

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9-17-13 (Conit) 3310 HRS - DROP OFF MM & RESIDENCE 2218 HRS - GAS SUV 2250 HRS - TR ARRIVED HOME 2308 HRS - DROP OFF SUV @ AVIS PIT AMPORT 2320 HRS - RETURN HOME

ATTACHMENT B
DISPOSAL MANIFEST

Invoice: 40491479

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# CERTIFICATE OF MANAGEMENT

This Certificate is to verify that the wastes specified on the following manifest(s) have been properly received and will be properly managed to meet all applicable local, state, and federal regulations.

Generator Name:	US COAST GUARD
Manifest/BOL Number:	010270023JJK
Approval Number(s):	H138041DET
•	
•	

FACILITY NAME: EQ DETROIT, INC.

EPA ID#:MID980991566

ADDRESS: 1923 Frederick

PHONE NUMBER: 313-347-1300 FAX NUMBER: 313.923.3375

**AUTHORIZED SIGNATURE:** 

ATTACHMENT C LABORATORY REPORTS



October 03, 2013

TETRA TECH NUS - Pittsburgh Attn: Mr. Joe Logan 661 Anderson Drive, Foster Plaza 7 Pittsburgh, PA 15220

#### **Project: USCG Atwater Facility**

Dear Mr. Joe Logan.

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

**Work Order** 

Received

Description

1309323

09/19/2013

**Laboratory Services** 

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/12-056-0); DEP (#E87622-24); Kansas DPH (#E-10302); Illinois DEP (#200026/003059); Kentucky DEP (#0021); Georgia EPD (#E87622-24); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); Louislana DEP (#83658); Virginia DCLS (#460153/1622); Wisconsin DNR North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood Project Chemist



#### PROJECT TECHNICAL NARRATIVE(s)

# Dissolved Metals by EPA 6000/7000 Series Methods

Narrative: The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the

lower of the two results has been reported.

Analysis: USEPA-6020A

Sample/Analyte: 1309323-01 DA-MW01R-0913

Selenium

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL,

therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte: 1309323-03 DA-MW04-0913

Arsenic

1309323-03 DA-MW04-0913

Selenium



### PROJECT TECHNICAL NARRATIVE(s)

# Total Metals by EPA 6000/7000 Series Methods

Narrative: The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the

lower of the two results has been reported.

Analysis: USEPA-6020A

Sample/Analyte: 1309323-04 DA-FD091713

Copper

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL,

therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte: 1309323-03 DA-MW04-0913

Arsenic



## STATEMENT OF DATA QUALIFICATIONS

### Dissolved Metals by EPA 6000/7000 Series Methods

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is considered estimated.

Analysis: USEPA-6020A

1309323-03

Sample/Analyte: 1309323-03

DA-MW04-0913 DA-MW04-0913 Barium Zinc



### STATEMENT OF DATA QUALIFICATIONS

### Total Metals by EPA 6000/7000 Series Methods

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 1309323-03

DA-MW04-0913

Barium

1309323-03 DA-MW04-0913

Zinc



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-0913

Lab Sample ID:

1309323-01

Matrix:

Water

Unit: Dilution Factor: ug/L 1

QC Batch:

1309927

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 14:15

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

Prepared: Analyzed: 9/20/13 10:20 9/27/13 17:21 ЛS

JLB By:

Analytical Batch: 3I30014

### Semivolatile Organic Compounds by EPA Method 8270C

		Analytical	<b>.</b>	
CAS Number	Analyte	Result	RL.	MDL
83-32 <del>-9</del>	Acenaphthene	0.50U	0.50	0.033
208 <del>-96-8</del>	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205 <del>-99-</del> 2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01- <del>9</del>	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	· 0.50U	0.50	0.11
20 <del>6-44-</del> 0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	· 0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>74</i>	40-110
2-Fluorobiphenyl	<i>70</i>	<i>50-110</i>
o-Terphenyl	<i>90</i>	<i>50-135</i>



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

USCG Atwater Facility

Client Sample ID:

DA-MW01R-0913

Lab Sample ID: Matrix: 1309323-01

Water

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 14:15

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

## Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	2.8		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019
Barium	300		5.0	0.68	ug/L	5	USEPA-6020A	09/30/13 13:46	KLV	1310019
Cadmlum	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019
Chromium	0.38	3	1.0	0.20	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019
Copper	0.94	3	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019
Mercury	0.20	u	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 15:40	DSC	1310251
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019
Zinc ·	2.9	3	10	1.5	ug/L	1	USEPA-6020A	09/30/13 12:47	KLV	1310019



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID: Lab Sample ID: DA-MW01R-0913

Matrix:

**1309323-01** Water

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 14:15

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

## Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	3.2		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 12:03	KLV	1310018
Barium	310		5.0	0.68	ug/L	5	USEPA-6020A	09/30/13 13:26	KTA	1310018
Cadmium	0.039	J	0.20	0.038	· ug/L	1	USEPA-6020A	09/30/13 12:03	KLV	1310018
Chromium	0.50	J	1.0	0.20	ug/L	1	USEPA-6020A	09/30/13 12:03	KLV	1310018
Copper	0.90	J	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 12:03	KLV	1310018
Lead	0.15	3	1.0	0.15	ug/L	1	USEPA-6020A	09/30/13 12:03	KTA	1310018
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 14:44	DSC	1310250
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	10/01/13 09:32	KLV	1310018
Silver	0.055	J	0.20	0.037	ug/L	1	USEPA-6020A	09/30/13 12:03	KTA	1310018
Zinc	4.5	3	. 10	1.5	ug/L	1	USEPA-6020A	09/30/13 12:03	KLV	1310018



Client: Project: **TETRA TECH NUS - Pittsburgh** 

USCG Atwater Facility

Client Sample ID:

DA-MW02R-0913

Lab Sample ID:

1309323-02

Matrix:

Water

Unit: Dilution Factor:

ug/L Factor: 1

QC Batch:

1309927

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 14:20 Mark Mengel

Sampled By: Received:

9/19/13 10:00

Prepared:

9/20/13 10:20

у: JTS

Analyzed:

9/27/13 17:57

By: JLB

Analytical Batch:

3I30014

## Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL.	MDL
	rum'y w		<del></del>	HIDE
83-32 <del>-9</del>	Acenaphthene	0.50U	0.50	0.033
208 <del>-96-</del> 8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205-99-2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08 <del>-9</del>	Benzo(k)fluoranthene	. 0.50U	. 0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01 <del>-9</del>	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
20 <del>6-44-</del> 0	<i><b>Fluoranthene</b></i>	0.50U	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.500	0.50	0.043
129-00-0	Pyrene	0.50บ	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>8</i> 4	40-110
2-Fluoroblphenyl	<i>84</i>	50-110
o-Temberul	Qd	50-175



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-0913

Lab Sample ID: Matrix: 1309323-02

Water

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 14:20

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

## Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	1.5		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 12:50	KTA	1310019
Barium	77		1.0	0.14	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019
Chromlum	0.27	J	1.0	0.20	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019
Copper	0.80	3	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 15:46	DSC	1310251
Selenium	0.45	3	1.0	0.31	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019
Zinc	5.7	3	10	1.5	ug/L	1	USEPA-6020A	09/30/13 12:50	KLV	1310019



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-0913

Lab Sample ID: Matrix: 1309323-02

Water

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 14:20

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL_	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	1.4		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 12:06	KLV	1310018
Barium	75		1.0	0.14	ug/L	1	USEPA-6020A	09/30/13 12:06	ΚLV	1310018
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	09/30/13 12:06	KLV	1310018
Chromium	0.22	3	1.0	0.20	ug/L	1	USEPA-6020A	09/30/13 12:06	KLV	1310018
Copper	0.80	3	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 12:06	ΚLV	1310018
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	09/30/13 12:06	KTA	1310018
Mercury	0.20	υ	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 14:50	DSC	1310250
Seienium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	10/01/13 09:35	KLV	1310018
Silver	0.20	ນ	0.20	0.037	ug/L	1	USEPA-6020A	09/30/13 12:06	KTA	1310018
Zinc	4.8	J	10	1.5	ug/L	1	USEPA-6020A	09/30/13 12:06	KTA	1310018



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-0913

Lab Sample ID;

1309323-03

Matrix:

Water

Unit:

ug/L

Dilution Factor: QC Batch:

1309927

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 15:45

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

Prepared:

9/20/13 10:20

JTS

Analyzed:

9/27/13 18:31

JLB

Analytical Batch:

3130014

## Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32 <del>-9</del>	Acenaphthene	0.50U	0.50	0.033
208 <del>-96-</del> 8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205-99-2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01-9	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
20 <del>6-44-</del> 0	Fluoranthene	0.50U	0.50	0.063
86-73-7	<b>Fluorene</b>	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50บ	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limit
Nitrobenzene-d5	. <b>83</b>	40-110
2-Fluorobiphenyl	87	<i>50-110</i>
o-Terphenyl	<i>96</i>	<i>50-135</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID:

PA-MW04-0913

Lab Sample ID: Matrix: **1309323-03**Water

Work Order:

1309323

Description:

**Laboratory Services** 

Sampled:

9/17/13 15:45

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

# Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	7.0		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 12:54	KTA	1310019
*Berium	190		5.0	0.68	ug/L	5	USEPA-6020A	09/30/13 13:48	KLV	1310019
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	09/30/13 12:54	KLV	1310019
Chromium	1.0	U	1.0	0.20	ug/L	1	USEPA-6020A	09/30/13 12:54	KTA	1310019
Copper	0.44	J	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 12:54	KLV	1310019
Lead	1.2		1.0	0.15	ug/L	· 1	USEPA-6020A	09/30/13 12:54	KLV	1310019
Mercury ·	0.20	υ	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 15:52	DSC	1310251
Selenium	0.92	3	1.0	0.31	ug/L	1	USEPA-6020A	09/30/13 12:54	KLV	1310019
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	09/30/13 12:54	KTA	1310019
*Zinc	94		50	7.5	ug/L	5	USEPA-6020A	09/30/13 13:48	KTA	1310019



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-0913

Lab Sample ID: Matrix:

1309323-03

Water

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 15:45

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

## Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		, RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	7.3		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 12:10	KLV	1310018
*Barlum	190		5.0	0.68	ug/L	5	USEPA-6020A	09/30/13 13:29	KLV	1310018
Cadmium	0.20	υ	0.20	0.038	ug/L	1	USEPA-6020A	09/30/13 12:10	KLV	1310018
Chromium	0.21	J	1.0	0.20	ug/L	1	USEPA-6020A	09/30/13 12:10	KLV	1310018
Copper	0.45	J	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 12:10	KTA	1310018
Lead	2.4		1.0	0.15	ug/L	1	USEPA-6020A	09/30/13 12:10	KTA	1310018
Mercury	0.070	J	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 14:55	DSC	1310250
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	10/01/13 09:38	KTA	1310018
Silver	0.20	U	0.20	0.037	ug/L	· 1	USEPA-6020A	09/30/13 12:10	KLV	1310018
*Zinc	99		50	7.5	ug/L	5	USEPA-6020A	09/30/13 13:29	KLV	1310018



**Gient:** 

**TETRA TECH NUS - Pittsburgh** 

Work Order:

1309323

Project:

**USCG Atwater Facility** 

Description:

Laboratory Services

Client Sample ID:

DA-FD091713

Sampled: Sampled By: 9/17/13 0:00

Lab Sample ID:

1309323-04

Mark Mengei

Matrix:

Water

Received:

9/19/13 10:00

9/20/13 10:20

JTS

Unit:

ug/L

1

Prepared: Analyzed:

9/27/13 19:07

JLB

**Dilution Factor:** QC Batch:

1309927

Analytical Batch:

3130014

By:

## Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32 <del>-9</del>	Acenaphthene	o. <b>s</b> ou	0.50	0.033
208 <del>-9</del> 6-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205 <del>-99</del> -2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08- <del>9</del>	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01-9	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50บ	0.50	0.11
205 <del>-44-</del> 0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Ruorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>84</i>	40-110
2-Fluorobiphenyl	<i>86</i>	50-110
o-Temhenvi	. 96	50-135



Client:

Matrix:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD091713 1309323-04

Lab Sample ID:

Water

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 0:00 Mark Mengel

Sampled By: Received:

9/19/13 10:00

### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	3.1		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 13:13	KLV	1310019
Barium	320		5.0	0.68	ug/L	5	USEPA-6020A	09/30/13 14:08	KLV	1310019
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	09/30/13 13:13	KLV	1310019
Chromlum	0.40	3	1.0	0.20	ug/L	i	USEPA-6020A	09/30/13 13:13	KTA	1310019
Copper	0.78	3	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 13:13	KLV	1310019
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	09/30/13 13:13	KTA	1310019
Mercury	0.20	υ	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 16:09	DSC	1310251
Selenium	0.95	J	1.0	0.31	ug/L	1	USEPA-6020A	09/30/13 13:13	KLV	1310019
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	09/30/13 13:13	KLV	1310019
Zinc	4.5	J	10	1.5	ug/L	1	USEPA-6020A	09/30/13 13:13	KLV	1310019



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD091713

Lab Sample ID: Matrix: **1309323-04** Water

Work Order:

1309323

Description:

Laboratory Services

Sampled:

9/17/13 0:00

Sampled By:

Mark Mengel

Received:

9/19/13 10:00

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	3.5		1.0	0.18	ug/L	1	USEPA-6020A	09/30/13 12:29	KLV	1310018
Barlum	310		5.0	0.68	ug/L	5	USEPA-6020A	09/30/13 13:43	KLV	1310018
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	09/30/13 12:29	KLV	1310018
Chromium	0.46	J	1.0	0.20	ug/L	1	USEPA-6020A	09/30/13 12:29	KLV	1310018
Copper	0.42	3	1.0	0.13	ug/L	1	USEPA-6020A	09/30/13 12:29	KLV	1310018
Lead	1.0	บ	1.0	0.15	ug/L	1	USEPA-6020A	09/30/13 12:29	KLV	1310018
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	10/02/13 15:23	DSC	1310250
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	10/01/13 10:06	KTA	1310018
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	09/30/13 12:29	KLV	1310018
Zinc	5.2	J	10	1.5	ug/L	. 1	USEPA-6020A	09/30/13 12:29	KLV	1310018

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PROJECT NO: FACILITY:  1/2 GO 2435 DETROIT - ATWATER  SAMPLERS (SIGNATURE)  Mark L. Ming L.				PROJECT MANAGER JOE LOGAN FIELD OPERATIONS LEADER MARK MENGEL CARRIER/WAYBILL NUMBER FEDEX # 8770				PI					LABORATORY NAME AND CONTACT; TRIMATRIX — GARY WOOD ADDRESS  SSLO CORPORATE EXCHANG C & SE CITY, STATE  BRAND RAPIDS; MT 495/2					
/309.3-23 8TANDARD TAT M RUSH TAT □					ð			CONTAINER TYPE PLASTIC (P) or GLASS (G)  PRESERVATIVE USED  SF 183 113										
YEAR 2013	nr. L	□ 48 hr. □ 72 hr. □ 7 day □		TOP DEPTH (FT)	BOTTOW DEPTH (FT)	MATRIX (GW, SO, SW. SD, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TIP						//	John State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the	// //a	NAGITS
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Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE • Grand Rapids, MI 4951.2 • 616.975.4500 • Fax 616.942.7463 • www.t.

www.trimatrixlabs.com

Page 18 of 20

ATTACHMENT D
DATA VALIDATION REPORT
(on pdf)

**DECEMBER 2013 EVENT** 



#### TETRA TECH

661 Andersen Drive = Pittsburgh, Pennsylvania 15220-2745 (412) 921-7000 = FAX (412) 921-4040 = www.tetratech.com

PITT 01-14-002

January 28, 2014

Mr. James Cook Environmental Engineer USCG Civil Engineering Unit 1240 East Ninth St., Rm. 2179 Cleveland, OH 44199-2060

Reference:

Contract Number HSCG83-08-D-3CL109

Task Order Number HSCG83-09-J-3CL358

**Subject:** 

Groundwater Monitoring Report (December 2013 Event) for U.S. Coast Guard

**Atwater Facility** 

Dear Mr. Cook:

Tetra Tech, Inc. (Tt) is pleased to submit this quarterly Groundwater Monitoring Letter Report for the referenced Task Order for the United States Coast Guard (USCG) Atwater Facility in Detroit, Michigan. The objective of this portion of the project includes quarterly monitoring of the groundwater associated with the Atwater Facility (Figure 1) following the removal action conducted in April 2013. The sampling is being performed according to Modification 004 of the Task Order.

Four quarterly groundwater sampling events are planned. The first event was performed in June 2013, and the second event was performed in September 2013. The third event, described in this report, was performed in December 2013. The last event is scheduled for March 2014. Field activities and groundwater analytical results for the December 2013 event are summarized in this report. The work was performed in accordance to the Field Sampling Plan - Soil and Groundwater (Tetra Tech, 2011) and the Quality Assurance Project Plan Addendum (Tetra Tech, 2011).

#### **FIELD OPERATIONS**

### **Groundwater Sampling**

Depth-to-water measurements were obtained at the three monitoring wells and to the Detroit River on December 4, 2013. Water level depths in the wells ranged from 2.20 (MW02R) to 3.90 (MW04) feet below top of casing (BTOC). Groundwater elevation data is provided in Table 1.

The groundwater level elevations in the three wells were higher in MW01R and MW02R (1.13 foot and 1.22 foot) and lower in MW04 (0.10 foot) during the December 2013 event as compared to the September 2013 event. The groundwater flow direction was toward the river.

On December 4, 2013, Tt collected groundwater samples from the three monitoring wells, MW01R, MW02R, and MW04. A duplicate sample was collected from MW01R. Samples were collected using low flow methods. Copies of the Groundwater Sample Log Sheets and Low Flow Purge Data Sheets are included in Attachment A. Following collection, the groundwater samples were shipped to Trimatrix Laboratories in Grand Rapids, Michigan for analysis of polynuclear aromatic hydrocarbons (PAHs) by EPA Method SW846 8310 and for total and dissolved Michigan 10 metals by EPA Methods 6020A and 7470A. Groundwater for dissolved metals analyses were filtered in the field using a 0.45 micron filter.

Purge water was drummed and was subsequently disposed of off-site by EarthSmart Environmental Solutions, LLC after confirming the results of the groundwater analyses (see Attachment B).

Groundwater samples were also analyzed for geochemical parameters using field kits and meters. The field kit analyses included dissolved oxygen (DO), alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate. The field meter measurements included pH and oxidation-reduction potential (ORP).

#### RESULTS

### **Laboratory Results**

The analytical results for this event are summarized in Table 2. This table also includes the results from the previous sampling events. A copy of the laboratory summary report for this event is provided in Attachment C. The data validation report is included in Attachment D as a pdf file on a CD.

The PAH analytical results were not significantly different from the 2011/2012 sampling events and the June and September 2013 events. Like the September 2013 event, the PAHs were less than detection limits in all wells. In the past three events, PAHs were not detected in MW01R and MW02R and only trace concentrations of two PAHs (benzo(a)anthracene and chrysene) were detected in MW04 detected during the June 2013 event. The concentrations of PAHs in the wells were less than the Michigan Department of Environmental Quality (MDEQ) residential exposure criteria.

At MW01R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW01, except for arsenic. The total arsenic concentrations (sample and duplicate) in the sample from MW01R were 1.4  $\mu$ g/L and 1.3  $\mu$ g/L, respectively, and the dissolved arsenic concentrations (sample and duplicate) were 1.2  $\mu$ g/L and 1.5  $\mu$ g/L, respectively. The range of total arsenic concentrations from the 2011/2012 samples from MW01 was 0.52  $\mu$ g/L to 1.5  $\mu$ g/L, and the range of dissolved arsenic concentrations was 0.6  $\mu$ g/L to 0.95  $\mu$ g/L. The December 2013 concentrations were slightly less than the September 2013 concentrations and have shown a decreasing trend since the June 2013 event. Although the arsenic concentrations were elevated for this round, they are less than the United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) of 10  $\mu$ g/L.

At MW02R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW02. The total arsenic concentration in the sample from MW02R was 0.63J  $\mu$ g/L, and the dissolved arsenic concentration was 0.51J  $\mu$ g/L. The range of total arsenic concentrations from the 2011/2012 samples from MW02 was 6.2  $\mu$ g/L to 14  $\mu$ g/L, and the range of dissolved arsenic concentrations was 1J  $\mu$ g/L to 12  $\mu$ g/L. The December 2013 arsenic concentrations were slightly less than the September 2013 concentrations and were similar to the June 2013 event concentrations. The arsenic concentrations for this round are less than the USEPA MCL of 10  $\mu$ g/L.

Total metals concentrations and dissolved metals concentrations in MW04 were generally similar to the previous results, except for arsenic. The total arsenic concentration in the sample was 3.6  $\mu$ g/L, and the dissolved arsenic concentration was 3.3  $\mu$ g/L, which were less than the concentrations in the September 2013 event (7.3  $\mu$ g/L and 7  $\mu$ g/L, respectively). The range of total arsenic concentrations from the 2011/2012 samples and the June 2013 event was 0.87J  $\mu$ g/L to 3.8J  $\mu$ g/L, and the range of dissolved arsenic concentrations was 0.84J  $\mu$ g/L to 3.6J  $\mu$ g/L. The December 2013 arsenic concentrations were significantly less than the maximum value observed in September 2013 and a within the range of previous measurements. The December 2013 arsenic concentrations were greater than the June 2013 concentrations, but still less than the USEPA MCL of 10  $\mu$ g/L.

#### **Field Measurements**

Groundwater samples were analyzed in the field using field kits and meters to evaluate the geochemistry and its effects on contaminant concentrations and the potential for biological activity. Samples were analyzed for DO, alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate with field kits, and pH and ORP were measured with field meters. These results are summarized on Table 3.

The results for MW01R suggest anaerobic biological activity. The DO was low, and the ORP was negative. The ORP result was much more negative compared to previous measurements from MW01 and MW01R. Alkalinity, carbon dioxide, and ferrous iron concentrations were relatively high, which are also typical of anaerobic biological activity. Sulfide was detected. The sulfate concentration was greater than the last event and similar to the June 2013 event, and the pH was in the neutral range.

The results from MW02R were similar to the June 2013 event. The DO was 1 mg/L, but less than the last event. The ORP was positive compared to the negative result during the last event, but the June 2013 event was positive. The ORP results from previous measurements at MW02 were negative. The alkalinity concentration was less than the result from MW01R, and the carbon dioxide concentration was approximately one tenth of the result from MW01R. The ferrous iron and sulfide concentrations were less than detection limits which suggests the absence of anaerobic activity. The sulfate concentration was similar the previous result, and the pH was in the neutral range.

Many results from MW04 are similar to both MW01R and MW02R. The DO was low, and the ORP was negative. The ORP results from previous measurements at MW04 were negative. The alkalinity concentration was high, similar to MW01R, and the ferrous iron concentration was similar of the value from MW01R. However, the carbon dioxide concentration was low, similar to the result from MW02R. No sulfide was detected, and the sulfate concentration was less than the concentration in both MW01R and MW02R. The pH was in the neutral range. The negative ORP, low DO, and high ferrous iron concentration suggest anaerobic activity. However, like the last event, no sulfide was detected. The low sulfate concentration suggests less influence from off-site. As noted in the Removal Action Completion Report, the results of soil samples collected at the border of the site suggest that the adjacent property could be a source of organic contaminants.

#### **CONCLUSIONS AND RECOMMENDATIONS**

Concentrations of PAHs and metals were less than USEPA and MDEQ criteria during this sampling event. PAH concentrations were less than detection limits in the wells. The arsenic concentrations in MW01R and MW02R were similar to the last event, and the arsenic concentrations in MW04 decreased to the range observed in the June 2013 event and the 2011/2012 results. The results of the geochemistry field measurements are not definitive, but suggest anaerobic biological activity. Quarterly monitoring will be continued as planned.

Should you have any questions, please contact the Project Manager, Mr. Joseph Logan at (412) 921-7231 or me at (412) 921-8415.

Very truly yours,

Roger A. Clark, Ph.D. Program Manager

**RAC** 

cc: file 112G02435 Joseph Logan

# WATER LEVEL MEASUREMENTS **QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT USCG ATWATER FACILITY** DETROIT, MICHIGAN

	Ground	Top of	Screene	d Interval	6/6/2	2011	9/14/	2011	12/1	6/2011	3/6	/2012	6/25	/2013	9/17/	2013	12/4/	/2013
Well ID	Surface Elevation (feet, NAVD 88)	Top of Casing (feet, NAVD 88)	Top (feet bgs)	Bottom (feet bgs)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)
MW01	579.58	579.53	3.0	13.0	2.22	577.31	1.70	577.83	1.00	578.53	1.43	578.10	ABAN	-	ABAN		ABAN	-
MW01R	579.69	579.49	3.0	13.0	<u>-</u>		-		-	-	•		2.63	576.86	4.02	575.47	2.89	576.60
MW02	579.54	579.62	3.0	13.0	3.95	575.67	3.32	576.30	3.20	576.42	3.42	576.20	ABAN		ABAN		ABAN	-
MW02R	579.07	578.83	3.0	13.0	-	_	-	-	-		_	_	2.67	576.16	3.42	575.41	2.20	576.63
MW03	579.33	579.00	3.0	13.0	3.89	575.11	3.94	575.06	4.08	574.92	4.26	574.74	ABAN	-	ABAN	-	ABAN	
MW04	578.68	578.11	3.0	13.0	3.18	574.93	3.05	575.06	2.49	575.62	3.30	574.81	3.58	574.53	3.80	574.31	3.90	574.21
River Level	578.69	NA	NA	NA	3.85	574.84	4.50	574.19	4.20	574.49	4.78	573.91	NM	NM	4.95	573.74	5.70	572.99

Notes:

bgs - below ground ABAN - Abandoned.

BTOC - below top of casing.

NA - Not Applicable.

NAVD - North American Vertical Datum.

NM - Not measured.

# SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 1 OF 4

	т		<del>,</del>			PAGE 1 (								
LOCATION	<b></b>	Michigan	Michigan			DAM				·		W01R		·
SAMPLE DATE	FEDERAL	Residential	GSI RBSL	Selected	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013	6/25/2013-D	9/17/2013	9/17/2013-D	12/4/2013	12/4/2013-D
TOP OF SCREEN, FEET bgs	MCL	RBSL	(1)	Criteria	3	3	3	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		KBSE	(1)		13	13	13	13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)						1 1	1	i i	<u>.                                      </u>	<u> </u>	<u> </u>			
ARSENIC	10	10	10	10	0.95 J	0.73 J	0.36 J	0.6 J	5	4.9	2.8	3.1	1.2	1.5
BARIUM	2000	2000	670	2000	190 J	300	260	250	300	290	300 J	320 J	290	300
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.14 J	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
CHROMIUM	100	100	100	100	0.3 J	0.27 J	1 U	1 U	0.71 U	0.86 U	0.38 J	0.4 J	0.5 U	0.2 J
COPPER	1300	1000	13	1300	0.44 J	0.61 J	0.28 J	1 U	0.73 J	0.55 J	0.94 J	0.78 J	0.66 J	0.68 J
LEAD	15	2	14	15	0.17 J	0.18 J	1 U	1 UJ	0.56 J	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U
SELENIUM	50	50	5	50	5 UJ	1.1 J	5 U	5 U	1 U	1 U	1 U	1 U	0.79 J	0.79 J
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.045 J	0.1 U
ZINC	NC	2400	170	2400	5.5	6.7	6.5 U	10 U	7 J	2.9 J	2.9 J	4.5 J	6.6 J	7.1 J
METALS (UG/L)							, ,		!	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th		-		
ARSENIC	10	10	10	10	1.5 J	1 J	0.52 J	0.63 J	4.6	5.1	3.2	3.5	1.4	1.3
BARIUM	2000	2000	670	2000	210	300	260	240	290	300	310 J	310 J	_300 J	300 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.79 J	0.06 J	0.044 J	0.04 J	0.039 J	0.1 U	0.1 U	0.1 U
CHROMIUM	100	100	100	100	0.31 J	0.25 J	0.57 J	1 U	0.54 J	0.54 J	0.5 J	0.46 J	0.5 U	0.5 U
COPPER	1300	1000	13	1300	0.74 J	0.79 J	0.98 J	1 U	0.71 J	0.81 J	0.9 J	0.42 J	1.3	1.2
LEAD	15	2	14	15	0.73 J	1	0.63 J	0.26 J	2	2.1	0.15 J	0.5 U	0.39 J	0.41 J
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	5 U	0.69 U	1 U	1 U	1 U	0.55 J	1 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.055 J	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	6.9 J	9.4	10	4 J	2.7 J	4.7 J	4.5 J	5.2 J	7.8 J	6.3 J
POLYNUCLEAR AROMATIC HYDR	OCARBON					<b>4</b>	•	1		-	- Barrer 180		*: <b>*</b>	1
2-METHYLNAPHTHALENE	NC	260	19	260	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	0.5 U	0.031 J	0.5 U	0.03 J	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ANTHRACENE	NC	43	D	43	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID_	2	0.5 U	0.5 U	0.051 J	0.06 J	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	D	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	_0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	لا 0.1 ل	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.041 J	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	_ 0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID _	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	0.5 U	0.5 U	0.5 U	0.04 J	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

bgs - Below ground surface.

NC - No criterion.

RBSL - Risk-Based Screening Level

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

# SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT **USCG ATWATER FACILITY DETROIT, MICHIGAN**

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LOCATION	l -	Mishiman	Michigan			IGE 2 UF 4	DAM	W02	<del></del>			DAMW02R	
SAMPLE DATE	FEDERAL	Michigan	Michigan	Selected	6/6/2011	9/14/2011	12/16/2011	12/16/2011-	3/6/2012	3/6/2012-D	6/25/2013	9/17/2013	12/4/2013
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)	]	13	13	13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)					Anna a na	· various s	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th	· monocona		· · · · · · · · · · · · · · · · · · ·	* May vary	
ARSENIC	10	10	10	10	1 J	9	9.3	9.2	12	12	0.55 J	1.5	0.51 J
BARIUM	2000	2000	670	2000	200 J	150	110	100	87	89	100	77 J	53
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.058 J	0.046 J	0.2 U	0.2 U	0.1 U	0.1 U	0.1 U
CHROMIUM	100	100	100	100	0.47 J	0.45 J	0.36 J	0.37 J	1 U	1 U	0.79 U	0.27 J	0.37 J
COPPER	1300	1000	13	1300	0.42 J	0.16 J	1 U	0.28 J	1 U	1 U	1.3	0.8 J	0.57 J
LEAD	15	2	14	15	0.2 J	1 U	1 U	1 U	1 UJ	1 UJ	0.5 U	0.5 U	0.5 U
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	5 U	0.39 J	1.3 J	1.4 U	1 U	0.33 J
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.12 J
ZINC	NC	2400	170	2400	5 U	5 U	6.9 U	7.8 U	10 U	10 U	3.7 J	5.7 J	5.6 J
METALS (UG/L)				***	macronium to	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		COMPANY		and the same of	1	Aleman	
ARSENIC	10	10	10	10	6.2	-12:	9.5	10	14	14	0.58 J	1.4	0.63 J
BARIUM	2000	2000	670	2000	150	160	110	110	86	84	110	75 J	54 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.73 J	0.054 J	0.1 J	0.11 J	0.042 J	0.1 U	0.043 J
CHROMIUM	100	100	100	100	0.33 J	0.51 J	0.39 J	0.38 J	1 U	1.3 U	0.98 J	0.22 J	0.39 J
COPPER	1300	1000	13	1300	1.2	0.29 J	0.19 J	0.39 J	1 U	1 U	1.3	0.8 J	0.57 J
LEAD	15	2	14	15	0.85 J	0.39 J	0.16 J	0.23 J	1 U	1 U	0.5 U	0.5 U	0.5 U
SELENIUM	50	50	5	50	1 J	1.5 J	5 U	5 U	5 U	0.55 J	1 U	1 U	_ 1 U
SILVER	NC NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	3.9 J	6.4	8.6	10	7.6 J	3.2 J	2.8 J	4.8 J	6 J
POLYNUCLEAR AROMATIC HYDR					10.00				-	- Company	4	l	
2-METHYLNAPHTHALENE	NC	260	19	260	24 J	43	42	33	50	49	0.05 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	6 J	14	10	7.7 J	6.9	6.6	0.05 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	1.7 J	3.8 J	3.7 J	2.6 J	3.9 J	3.7 J	0.05 U	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	3.8 J	4.8 J	3.1 J	2.2 J	6.3	4.6 J	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.28 J	1.3 J	1.2 J	10 U	0.92 J	0.72 J	0.1 U	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 UJ	1 J	10 U	10 U	5 U	5 U	0.1 U	0.1 ป	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC NC	11	NC	1	0.05 J	12 U	10 U	10 U	0.41 J	5 U	0.1 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.1 J	12 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.52 J	1.5 J	1 J	0.81 J	0.92 J	0.82 J_	0.1 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	3.5 J	13	24	19	21	21	0.1 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	_11	520	120	170	170	130	180	180	0.05 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	8.8 J	11 J	11	8.3 J	12	12	0.1 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.39 J	1.5 J	1 J	10 U	0.92 J	0.82 J	0.1 U	0.1 U	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion. bgs - Below ground surface.

NC - No criterion.

RBSL - Risk-Based Screening Level

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

# SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

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<u> </u>	r			PAGE 3 C	)F 4					
LOCATION		Michigan	Michigan	ا ، ، ، ا	<del></del>	r		W03		<del>, , , , , , , , , , , , , , , , , , , </del>
SAMPLE DATE	FEDERAL	Residential	GSI RBSL	Selected	6/6/2011	6/6/2011-D	9/14/2011	9/14/2011-D	12/16/2011	3/6/2012
TOP OF SCREEN, FEET bgs	MCL	RBSL	(1)	Criteria	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs	<u></u>		(-)	<u> </u>	13	13	13	13	13	13
DISSOLVED METALS (UG/L)				<u> </u>	<u> </u>		1			
ARSENIC	10	10	10	10	2.7 J	2.7 J	4.3 J	4.1 J	1.3 J	0.71 J
BARIUM	2000	2000	670	2000	310 J	300 J	370	360	310	270
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHROMIUM	100	100	100	100	0.21 J	1 U	0.22 J	0.23 J	1 U	1 U
COPPER	1300	1000	13	1300	1 U	1 U	1 U	0.15 J	0.25 J	1 U
LEAD	15	2	14	15	1 U	1 U	_ 1 U	1 U	1 U	1 UJ
SELENIUM	50	50	5	50	5 UJ	5 UJ	0.97 J	0.96 J	5 Ü	5 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ZINC	NC	2400	170	2400	4.2 J	3.9 J	5.5	5 U	7.7 U_	10 U
METALS (UG/L)							j ,		4	
ARSENIC	10	10	10	10	2.6 J	2.5 J	4.8 J	4.4 J	1.3 J	0.75 J
BARIUM	2000	2000	670	2000	290	290	370	340	300	270
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.37 U	1.1 J	0.051 J	0.2 U
CHROMIUM	100	100	100	100	0.29 J_	0.27 J	0.24 J	0.24 J	0.22 J	1 U
COPPER	1300	1000	13	1300	0.77 J	1 U	0.3 J	0.37 J	0.39 J	1 U
LEAD	15	2	14	15	0.47 J	0.33 J	0.7 J	0.57 J	1.2	0.18_J
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ZINC	NC	2400	170	2400	8.5 J	4.6 J	10	8.4	8.4	2 J
POLYNUCLEAR AROMATIC HYDR						4 page	Unida			
2-METHYLNAPHTHALENE	NC	260	19	260	0.07 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ACENAPHTHENE	NC	1300	38	1300	1.6	1.6	2.6	2.9	1.5	1.6
ACENAPHTHYLENE	NC	52	ID	52	0.05 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ANTHRACENE	NC	43	ID	43	0.22 J	0.19 J	0.23 J	0.23 J	0.092 J	0.13 J
BENZO(A)ANTHRACENE	NC	2	ID	_2	0.5 U	0.5 U	0.072 J	0.051 J	0.041 J	0.051 J
BENZO(A)PYRENE	0.2	5	ID	<u>0</u> .2	0.5 U	0.5 U	0.052 J	0.5 U	0.5 U	0.5 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.082 J
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
FLUORANTHENE	NC	210	1.6	210	0.2 J	0.15 J	0.27 J	0.23 J	0.11 J	0.11 J
FLUORENE	NC	880	12	880	0.36 J	0.27 J	0.19 J	0.28 J	0.13 J	0.13 J
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.14 J
NAPHTHALENE	NC	520	11	520	0.19 J	0.11 J	0.062 J	0.5 U	0.5 U	0.5 U
PHENANTHRENE	NC	52	2	52	1.2	1	1.4	1.5	0.6	0.67
PYRENE	NC	140	ID	140	0.15 J	0.13 J	0.23 J	0.24 J	0.1 J	0.082 J

^{1 -} For comparison only.

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

Shaded cell indicates concentration greater than selected criterion.

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

**RBSL - Risk-Based Screening Level** 

# **SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT USCG ATWATER FACILITY** DETROIT, MICHIGAN PAGE 4 OF 4

				PA	GE 4 OF 4						
LOCATION		Michigan	Michigan					DAMW04			
SAMPLE DATE	FEDERAL	Residential	GSI RBSL	Selected	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013	9/17/2013	12/4/2013
TOP OF SCREEN, FEET bgs	MCL	RBSL	l	Criteria	3	3	3	. 3	3	3	3
BOTTOM OF SCREEN, FEET bgs		KDOL	(1)		13	13	13	13	13 _	13	13
DISSOLVED METALS (UG/L)					-	3 3	VARIANCE .	Y Johnson Ave.	Table of	1	10.00
ARSENIC	10	10	10	10	3 J	3.6 J	1.2 J	0.84 J	1.9	7	3.3
BARIUM	2000	2000	670	2000	150 J	210	130	130	190	190 J	170
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.2 U	0.19 J	0.31	0.1 U	0.075 J
CHROMIUM	100	100	100	100	1 U	1 U	0.23 J	1 U	0.83 U	0.5 U	0.5 U
COPPER	1300	1000	13	1300	0.88 J	0.6 J	0.32 J	1 U	1.9	0.44 J	0.25 J
LEAD	15	2	14	15	0.44 J	0.45 J	0.17 J	2.8 J	3	1.2	1.4
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	0.73 J	2.6	1 U	1 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	110	100	100	140	180	94 J	84
METALS (UG/L)					a shooppen		ALL AND ALL	***************************************	A	)) ) ) ) ) ) ) ) ) ) ) ) ) ) ) ) ) ) )	1
ARSENIC	10	10	10	10	3 J	3.8 J	1.1 J	0.87 J	1.4	7.3	3.6
BARIUM	2000	2000	670	2000	150	210	130	130	190	190 J	170 J
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.091 J	0.25	0.34	0.1 U	0.085 J
CHROMIUM	100	100	100	100	0.36 J	1 U	1 U	1 Ü	0.71 J	0.21 J	0.35 J
COPPER	1300	1000	13	1300	2.6	1.8	0.64 J	1 U	1.4	0.45 J	0.43 J
LEAD	15	2	14	15	2.1	3.3	1.8	2.8	3.8	2.4	3.7
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	0.79 J	4.9	1 U	0.37 J
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	110 J	120	110	150	190	99 J	90 J
POLYNUCLEAR AROMATIC HYDR				3	-	THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY O			viii amer.	***************************************	
2-METHYLNAPHTHALENE	NC	260	19	260	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	0.05 J	0.03 J	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52_	ID_	52	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.19 J	0.5 U	0.062 J	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.24 J	0.5 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.22 J	0.5 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.27 J	0.5 U	0.1 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.22 J	0.5 U	0.052 J	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.5 U	0.5 U	0.04 J	0.5 U	0.1 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	0.05 J	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	0.05 J	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.04 J	0.5 U	0.061 J	0.5 U	0.1 U	0.1 ป	0.1 U

^{1 -} For comparison only.

Shaded cell indicates concentration greater than selected criterion.

J - Estimated Concentration.

U - Below detection limit at detection limit shown.

D - Duplicate sample

bgs - Below ground surface.

GSI - Groundwater-surface water interface

ID - Insufficient data to develop criterion.

MCL - Maximum Contaminant Level.

NC - No criterion.

RBSL - Risk-Based Screening Level

# SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 1 OF 3

LOCATION		DAN	W01			DAMW01F	2
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13	12/4/13
Appearance	clear	clear	clear	clear	clear	clear	clear
		ĺ	,				
Purge Meter Measurements							
pH (SU)	6.8	6.5	6.8	7.0	7.0	6.6	7.2
Specific Conductivity (mS/cm)	0.992	1.04	1.08	_1.02	0.922	1.13	1.04
Temperature (°C)	18.4	20.3	9.5	7.0	19.3	19.3	11.3
Turbidity (NTU)	0.0	0.0	8.8	5.1	7.4	1.0	0.0
Dissolved Oxygen (mg/L)	0.0	0.26	0.0	2.08	0.38	0.39	0.7
ORP (mV)	-176	158	-204	-98	-84	-122	-213
Field Test Kits							
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	0.9	0.7	0.9
Alkalinity (ppm)	NM	NM	NM	NM	375	350	300
Carbon Dioxide (ppm)	NM	NM	NM	NM	75	85	110
Ferrous Iron (ppm)	NM	NM	. NM	NM	1.4	2.3	1.2
Sulfide (ppm)	NM	NM	NM	NM	0.05	0.9	0.9
Sulfate (ppm)	NM	NM	NM	NM	51	8	55

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

**TABLE 3** 

# **SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN**

# PAGE 2 OF 3

LOCATION		DAN	W02			DAMW02F	<u> </u>
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13	12/4/13
Appearance	clear	clear	clear	clear	clear	clear	clear
			]	w/black			
				specks			
Purge Meter Measurements							
pH (SU)	7.7	7.3	7.6	8.1	7.3	7.8	7.2
Specific Conductivity (mS/cm)	1.49	1.38	1.48	1.27	0.554	0.564	0.620
Temperature (°C)	12.5	19.0	10.4	8.8	20.1	18.1	11.1
Turbidity (NTU)	0.0	1.7	1.2	1.5	3.2	0.0	2.9
Dissolved Oxygen (mg/L)	0.0	0.37	0.0	1.55	1.51	0.47	1.61
ORP (mV)	-192	-297	-294	-255	43	-28	51
Field Test Kits							
Dissolved Oxygen (mg/L)	NM	ŅM	NM	NM	2.7	1.5	1
Alkalinity (ppm)	NM	NM	NM	NM	180	500	190
Carbon Dioxide (ppm)	, NM	NM	NM	NM	26	25	11
Ferrous Iron (ppm)	NM	NM	NM	NM	0	0.1	0
Sulfide (ppm)	NM	NM	NM	NM	0	0	0
Sulfate (ppm)	NM	NM	NM	NM	31	37	41

mg/L - milligrams per liter. mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.



# SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER **QUARTERLY MONITORING REPORT FOR DECEMBER 2013 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN**

PAGE 3 OF 3

LOCATION	1 2	DAN	W03		DAMW04						
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13	12/4/13
Appearance	clear	clear	clear	clear	clear	clear	clear	clear	clear	clear	clear
Purge Meter Measurements	<u> </u>						<u> </u>	<u> </u>			L
pH (SU)	7.2		6.5					7.1	6.9		
Specific Conductivity (mS/cm)	0.925	0.99	1.06	0.992	0.694	0.863	0.71	0.664	0.772	0.794	0.652
Temperature (°C)	12.5	21.8	10.6	8.8	16.1	22.8	11.0	8.4	16.7	20.8	13.9
Turbidity (NTU)	0.7	1.3	4.5	0.5	1.7	0.0	3.6	0	. 0	0	0.15
Dissolved Oxygen (mg/L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.48	0.47	1.17
ORP (mV)	-107	-92	-74	-123	-53	-21	-24	-15	64	-46	-45
Field Test Kits										-	
Dissolved Oxygen (mg/L)	I. NM	NM	NM	NM	NM	NM	NM	NM	1	0.7	0,5
Alkalinity (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	400	360	300
Carbon Dioxide (ppm)	NM .	NM	NM	NM	NM	NM	NM	NM	60	75	31
Ferrous Iron (ppm)	NM	NM	_ NM	NM	NM	. NM	NM	NM	0.4	1.4	1.2
Sulfide (ppm)	NM	_ NM	NM	NM	NM	NM	NM	NM	0		
Sulfate (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	>80	26	15

mg/L - milligrams per liter. mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

SU - standard units.

FIGURE



ATTACHMENT A SAMPLING FIELD FORMS

# **GROUNDWATER SAMPLE LOG SHEET**

Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.:

112G02435

						Project N		1120024	J.J.			
Sample i	D:	DA-MW01			_	Sampled By: T. ROJAHN						
QA/QC D	uplicate ID:	DA-F	D-1213	<u> </u>		Sample D	)ate:	12/04/13				
MS/MSD	Collected:	YES	(NO)	·	·	Sample T	îme:	1250				
WELLINE	ORMATION			** <b>***</b>	CAR A	4. 17. 18. 1				F 4 4 7 1 4 2	r version.	
	MW01R					Purge Da		12/04/13				
		2 ⁿ					ter Level (f					
	creen (ft-BT		3'	**			tor Reading					
	f Screen (ft		13			Purge Me		Peristaltic	Pump			
	Il Depth (ft-i		13'			Sample N		Peristaltic				
	NT INFORM			<b>建</b> 电缆头上:	\$ 1988							
	ality Instru		HOCIBA	Mary and a	1 36 36 365			Geofee			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	
Turbidity		nent: 2	11			Fullip Co	ilibolier:	Stores	n Geop	emp		
	ATA: ME		SARE WERE		1000000							
Time	H ² 0 Level	Flow	Color	ary and passage a	S.C.	DO	Turbidity	1	ORP	Salinity	Other	
(Hrs)	(ft-BTOR)	mL/min.	Color	<b>pH</b> (S.U.)	(mS/cm)	(mg/L)	(NTU)	Temp. (C°)	(mV)	(% of ppt)	Other	
1143	2.89	0	Clear	-	-	-			-		Stac F	
1153	2.98	180	LIEAR	6.98	0.980	0.88	0.8	1186	-186	υ. 3	1800ml	
1203	2.78		-	6.99	0.961	0.68	0.9	11.66	-203	0.3	3600	
	2 75	180					0.1		-210	0.3		
1213		180	41	709	0.974	0.67	0.0	11,50			5400	
1223	2.98	180	11	715	0.983	0.68		11.51	-212.	0.3	7200	
1233	2 98	180	11	7.18	0 999	0 67	0.0	11.44	-213	0.3	9000	
1238	2.98	180	"	7.15	1.03	0.69	0.0	11. 35	213	U.3	9,900	
1243	298	180	11	7.16	103	0.69	0.0	//. 33	-213	0.3	10800	
1248	298	180	11	7.16	1.04	0.70	0.0	11.29	.213	0.3	11900	
_		,										
_												
FINAL PUF	RGE / SAMP	LE:DATA:		<b>海影</b> 機動	解辨识量之	が、地震		0.0000	<b>建筑</b>	新加坡市	學是設定	
Start	End	Total	Total Vol.	pН	s.c.	DO	Turbidity	Temp.	ORP	Salinity	Other	
Purge	Purge	(min.)	(gal(/L.)	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)		
1143	1248	65	11.9	7.16	1.04	0.70	0.0	11.29	- 213	0.3	<u> </u>	
ANALYSIS	PRESERV	ATION AND	BOTTLER	EQUIRMEN	ITS A CO		<b>建</b> 原文文:	是一种	<b>新</b>	<b>一类TIB</b> 7.2	看 養養養養	
	ilysis		Method		Preser		Number	Vol.	Bottle 1		Collected	
	\Hs	S	See lab Spe	ЭС	4	. C	2	1 L	Ambe	Glass	1	
	Metals	S	See lab Spe	ec		103	1	250 mi		stic	V	
Dissolve	ed Metals	S	See lab Spe	ec	H	103	11	250 ml	Pla	stic	V	
						-						
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<u> </u>		<del></del> _			<del>                                     </del>						<del>                                     </del>	
<u> </u>							-		<del></del>		<del> </del>	
OBSERVA	TIONS! 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# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 2 of 3

Project Site	Name:	USCG De	troit		-	Sample ID N	o.: <i>DA -</i>	MWOIR-I	2/3
Project No.:		112G0243	35	•	•	Sample Loca		WOIR	
Sampled By	71	POSAHN		•		Duplicate:			
Field Analys		MANN		•		Blank:			<u>·</u>
	Checked as per (		ecklist (init	ials): ブ	K			<del></del>	
	A: High subfliction of the						legejanilinin een		
Date: /2	104/13	Color	pН	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
	250	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	PP.t.	(+/- mv)
Method: PERI		CLEAR	7.16	1.04	11.29	0.0	0.70	0.3	-2/3
	CTION/ANALYSIS I								:
ORP (Eh) (+/-	· mv)		Electrode M	Make & Mod	iel:	KIBA /7	3/3		
i			Reference	Electrode (d	circle one): S	ilver-Silver Chloric	de / Calomel /	Hydrogen / P/	itinum)
Dissolved Ox	cygen:								
Equipment: Chem	netrics Test Kit				-	Concentration:	0.9	ppm	
Range Used:	Range	Method	Concentrat						
	0 to 1 ppm	K-7501	0.	9	]	Analysis Time:	12.55	_	
	1 to 12 ppm	K-7512			]				
Notes:	•								
Alkalinity:	<u>.</u>		-						
Equipment: Chem	netrics Test Kit					Concentration:	300	ppm	
Range Used:	Range	Method	Concentrat	ion ppm	]				
	10 to 100 ppm	K-9810				Analysis Time:	1342	_	
- V	50 to 500 ppm	K-9815	30	<u> </u>					
	100 to 1000 ppm	K-9820	<u> </u>		J				
Notes:				_				Filtered:	
Carbon Dioxi Equipment: Chem						Concentration:	110	ppm	
Range Used:	Range	Method	Concentrat	ion ppm	]	Analysis Time:	1337	7	
	10 to 100 ppm	K-1910			ľ			•	
	100 to 1000 ppm	⊮-1920							
	250 to 2500 ppm	K-1925	<u> </u>						
Notes:									
Ferrous Iron	(Fe²+):						_		
Equipment:	HACH IR-18C C	olor Wheel	Range: 0 -	10 mg/L		Concentration:	1.2	ppm	
						Analysis Time:	1201		
Notes:						Analysis Time:	7307	: Elleand	
Sulfide (S ² ):	,					<del></del>		Filtered:	
` '	and a second					0 : ::	0.9		
Equipment Chem			I.	<del> </del>	1	Concentration:	<del></del>	ppm	
Range Used:	Range	Method	Concentrati				1331		
	0 to 1 ppm	K-9510	0,	7		Analysis Time:		,	
	1 to 10 ppm	K-9510	İ						
Notes:									



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 3 of 3

Project Site Name:	USCG Detroit	Sa	mple ID N	Vo.: DA - MI	NOIR-1213
Project No.:	112G02435	Sa	mple Loca	ation: Mu/0	IR
Sampled By:	ROSAHIN		plicate:		
Field Analyst:	• •	Bla	ank:		<u> </u>
Field Form Checked as pe	r QA/QC Checklist (initia	ls): TR			- · · · ·
Sulfate (SO ₄ 2-):					
Equipment: HACH DR/890	Range: 2-70 mg/L	Con	centration:	55ppm	l
Program/Module: 92		•			
		An	alysis Time:	1319	
Notes:			_		Filtered:
QA/QC Checklist:					
All data fields have been comple	eted as necessary:				
Correct measurement units are	cited in the SAMPLING DAT	'A block:			
Values cited in the SAMPLING	DATA block are consistent w	rith the Groundwater San	nple Log St	heet:	
Final calulated concentration is	within the appropriate Range	Used block:			
Title block on each page of form	is initialized by person who p	performed this QA/QC CI	hecklist:		

# **GROUNDWATER SAMPLE LOG SHEET**

Tt.	Tetra Tech Inc.
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**Total Metals** 

**Dissolved Metals** 

See lab Spec

See lab Spec

OBSERVATIONS / NOTES:

Event:

Quarterly GW Monitoring

Project No.:

Project Site Name: Detroit - Atwater

112G02435

Sample II	D;	DA-MW02	R-1213			Sampled	By: /	nakk /	MENUEL			
QA/QC D	uplicate ID:		_			Sample D	)ate:	12/04/13				
MS/MSD	Collected:	YES	<b>(0)</b>			Sample T	ime:	1240				
WELLINF	ORMATION:	<b>是维持</b> 其作员	TARRE	<b>建筑</b> 新疆	<b>新年李州</b> 27月	MARK IN	<b>建建筑</b>	<b>和那</b>	學別論家們			
Well ID:	MW01R					Purge Da	te:	12/04/13				
Well Diar	neter (in):	2"			·	Static Wa	ter Level (f	t-BTOR):	2.20			
Top of So	creen (ft-BT	OR):	3'			PID Monitor Reading: NA						
Bottom o	f Screen (ft	BTOR):	13			Purge Method: Peristaltic Pump						
Total We	II Depth (ft-f	STOR):	13'		:	Sample Method: Peristaltic Pump						
EQUIPME	NTINEORM	ATION	<b>32 代表</b> 5		122.3	はいません。			在水分隔			
Water Quality Instrument: HCRIBA U 52 (USBC43x						Pump:Co	ntroller:	GEC PUN	שט) נקו	7/4/1	) _	
Turbidity Meter:						Ċ						
PURGE D	NTA:金龙灣					Car say		细胞的				
Time	H ² 0 Level	Flow	Color	рН	S.C.	DO	Turbidity	Temp.	ORP	Salinity	Other	
(Hrs)	(ft-BTOR)	mL/min.		(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)		
1135	2,2	200	CICAR	6.25	6.669	2.23	512	13.19	<del></del>	6.3		
1145	2.5	200	clear	6.64	0.638	1.71	4.7	13.06	98	0.3		
1155	2.55	200	clear	6.92	0.629	1.45	. 5.5	12.22		C-3		
1205	2.63	200	CICAR	7.67	0 624	1.65	5.6	11.51	66	0.3		
1215	2.67	200	CICAR	7.15	0.626	1.65	3.2	11.28	57	0.3		
1225	2.68	200	CICAR	744	0.623	1.64	3.1	11.17	53	0.3		
1235	2.70	200	CICAR	7.21	0.620	1.61	2.9	11-11	51	0.3		
		_										
		•										
L												
FINAL PUF	IGE/SAMP	LE DATA				ALL INCLUDING	2 (	A PARTY	\$3EC		化磁铁	
Start	End	Total	Total Vol.	pН	S.C.	DO	Turbidity	Temp.	ORP	Selinity	Other	
Purge	Purge	(min.)	(gal. / L.)	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)		
//35	/2 <i>3</i> 5	60	*DOTT! E C	7.21	0 620	1.61	2.4	//-//	51	0.3	The second transfer	
	PRESERV	AT ICINIANG		EUUIHMEN		****	26					
	lysis \Hs		Method See lab Spe	<u> </u>	Presen	C	Number 2	Vol. 1 L	Bottle 1	r Glass	Collected	
1 7	VI 10		ice iau ope	·	4	U	1 4	1 1 14	I WILLDE	Ulass		

HN03

HN03

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250 ml

250 ml

Plastic

Plastic

Coordinates:	N	E	Signature(s):



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page Zof 3

Project Site	Name:	USCG De	troit			Sample ID N	o.: <i>DA -</i> .	MW02R	- iz13
Project No.:	•	112G0243		-		Sample Loca	ition:	WOZR	
Sampled By	: M.	MENGE	4	-		Duplicate:			
Field Analys		POSAHA		-		Blank:		•	
	Checked as per C			- tials): フ	RR	Diam.	<del></del>		
	A:								
Date: /2-0		Color	pН	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 124		(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	PPT (Tb)	(+/- mv)
Method: PERI		CKAR	7.21	0.620	11.11	2.9	161	0.3	51
	CTION/ANALYSIS I								
ORP (Eh) (+/-	111111111111111111111111111111111111111			Make & Mod	el: Hazi	BA / 7:	3/3		
, ,,,,						ilver-Silver Chloric	de / Calomel /	Hydrogen //P/	ativen
Dissolved O	kvaen:								
Equipment: Chen	• •					Concentration:		_ppm	
Range Used:	Range	Method	Concentrat	tion ppm					
	0 to 1 ppm	K-7501				Analysis Time:	1406	_	
	1 to 12 ppm	K-7512							
Notes:									
Alkalinity: Equipment: Chen	netrics Test Kit					Concentration:	190	_ppm	
<del></del>	<del></del>		To	P	]				
Range Used:	Range	Method	Concentra	ton ppm	ĺ	Analysis Time:	1118		
<i>-</i>	10 to 100 ppm	K-9810 K-9815	/9	10	İ	Analysis Time:	1720	-	
<del></del> -	50 to 500 ppm 100 to 1000 ppm	K-9815	1 /		1				
Notes:	1 100 to 1000 ppin	K-9020	<u></u>		J			Filtered	<del>l</del> ·
Carbon Diox	ide:	<del></del>						- Intoroc	
Equipment: Chen						Concentration:		_ppm	
Range Used:	Range	Method	Concentrat	tion ppm	]	Analysis Time:	1424	_	
~	10 to 100 ppm	K-1910		11				-	
	100 to 1000 ppm	K-1920							
	250 to 2500 ppm	K-1925	<u> </u>						
Notes:									
Ferrous Iron	(Fe²⁺):								
Equipment:	HACH IR-18C C	color Wheel	Range: 0 -	10 mg/L		Concentration:		_ppm	
						Analysis Time:	14//	<u></u>	. 1
Notes:	<del> </del>							Filtered	1:
Sulfide (S ² ): Equipment: Cherr	natrice Test Kit					Concentration:	O	ppm	
Range Used:	Range	Method	Concentrat	tion nom	1	Concontration,		_ hp	
riange oseu:	<u> </u>		Concentral			Analysis Time:	1421	Ì	
	0 to 1 ppm	K-9510	+			Analysis Time:		-	
Motos:	1 to 10 ppm	K-9510	<u> </u>		I				



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 3 of 3

Project Site Name: USCG Detroit	Comple ID No . D.A. AAKIA28 - 1213
	Sample ID No.: VA - MINO EN 17273
Project No.: 112G02435	Sample ID No.: DA - MWOZR - 1213 Sample Location: MWOZR
Sampled By: M MENGEL	Duplicate:
Field Analyst: T. ROJAHA	Blank:
Field Form Checked as per QA/QC Checklist (initials): 74	CL
Sulfate (SO ₄ ² ):	
Equipment: HACH DR/890 Range: 2-70 mg/L	Concentration: 4/ ppm
Program/Module: 92	
	Analysis Time:
Notes:	Filtered:
QA/QC Checklist:	
All data fields have been completed as necessary:	
Correct measurement units are cited in the SAMPLING DATA block:	
Values cited in the SAMPLING DATA block are consistent with the G	Groundwater Sample Log Sheet:
Final calulated concentration is within the appropriate Range Used b	lock:
Title block on each page of form is initialized by person who performe	d this QA/QC Checklist:

# **GROUNDWATER SAMPLE LOG SHEET**

TŁ	Tetra	Tech	Inc.
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Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.:

112G02435

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Sample II	):	DA-MW04	-1213			Sampled	Ву: /	MARK A	ENGEL			
QA/QC D	uplicate ID:		•			Sample I	Date:	12/04/13				
MS/MSD	Collected:	(YES)	NO			Sample T	ime:	1415				
WELL INFO	ORMATION:		建 海	"是秦朝皇者"		Page 70	111	THE SHEET	章、 解:"红	THE PARTY	<b>""</b>	
Well ID:	MW0			•	,	Purge Da	te:	12/04/13				
Well Dian		2"				Static Water Level (ft-BTOR): 3.90						
	reen (ft-BTC		3'				tor Reading		<del></del>			
	f Screen (ft-		13	<del></del>		Purge Me		Peristaltic	Pump			
	Depth (ft-E		13'			Sample N		Peristaltic				
	T INFORM										雅 「智仁之	
	ality Instrun						ntroller: (			BALLENIE ER . P19	SCO 1 SE MINUR	
Turbidity		11011L. // 69	בנט הפון	(0)0	, ,	Funipico	muoner. C	EUPUNT				
	TA:		of a second					<b>公司</b>	<b>第二十二十二</b>			
Time	H ² 0 Level	Flow	Color	pH	S.C.	DO	Turbidity	Temp.	ORP	Salinity	Other	
(Hrs)	(ft-BTOR)	mL/min.	55.51	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)		
1310	3.90	200	CHAR	6.94	0.643	1.77	27	14.44	-8	0.3		
1320	4.2.5	200	CICAR	6.91	0.640	1.40	3.9	14.01	-15	0.3		
1330	4.37	200	C/CAR	6.90	0.641	1.33	4.2	13.91	-26	0.3		
1340	4.45	200	clear	4.91	0.640	1.74	2.0	13.97	-33	0.3		
1356	460	200	CICAR	4.93	0.645	1.219	1.1	13.97	-34	0.3		
1400	4.65	200	CLEAR	6.44	0.450	1.17	0.6	13.93	42	0.3		
	-		CICAR	6.45	C:652	1.17	0.5		-45-	0.3		
1410	4.67	200	LIEPE	6.42	6.632	7.7	0.3	13.42	~3	0:3		
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# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page Z of 3

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(mS/cm) (°C) (NTU) (mg/l)  STAFIC CLEAR 6.95 0.652 13.92 0.15 2.17  CTION/ANALYSIS INFORMATION:  TIVY)  Electrode Make & Model: HOURA 73/3  Reference Electrode (circle one): Silver-Silver Chloride / Calomel /  Vigen:  etrics Test Kit  Concentration: 0.0  Range Method Concentration ppm  0.to 1 ppm K-7501 0.5  1 to 12 ppm K-7512  Range Method Concentration ppm  10 to 100 ppm K-9810  So to 500 ppm K-9815 300  de:  etrics Test Kit  Concentration: 3/  Analysis Time: 1502  Concentration: 3/  Analysis Time: 1502	Sample Location: MWO4   Duplicate: Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Blank:   Bl



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 3 of 3

Project Site Name:	USCG Detroit	Sample ID No.: DA-MW04-1	213
Project No.:	112G02435	Sample Location: MO4	<u> </u>
Sampled By: M.	MENGEL	Duplicate:	
Field Analyst: 7-	ROSAHL'	Blank:	<u> </u>
Field Form Checked as	per QA/QC Checklist (initials): 7	TRR	
Sulfate (SO ₄ ² ):	`	_	
Equipment: HACH DR/89	0 Range: 2-70 mg/L	Concentration:ppm	
Program/Module: 92			
		Analysis Time:	
Notes:		Filtered:	_
QA/QC Checklist:			
All data fields have been com	pleted as necessary:		
Correct measurement units a	re cited in the SAMPLING DATA bloo	sk:	
Values cited in the SAMPLIN	G DATA block are consistent with the	Groundwater Sample Log Sheet:	
Final calulated concentration	is within the appropriate Range Used	f block:	
Title block on each page of fo	rm is initialized by person who perform	ned this QA/QC Checklist:	

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ATTACHMENT B
DISPOSAL MANIFEST

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E	186	Alternate Facility (or Gen	cretor)			Man	lest Referenc	a Number.	U.S. EPA ID	Number	<del></del>		
FACILITY	ع	My's Phone:							ſ				-
		Signature of Alternate Fa	citiy (or Generator)							·	Mort	th Day	Year
DESIGNATED	19.1	lecerdous Waste Report	Management Method Codes (i.e., codes	for hazardous waste tre	géneri, dispos	al, and recyc	(amotors)	<del></del>	<del></del>	<u></u>			<u></u>
18	1.	ПM	2.		3.		·····		•				
	20.1	Designated Facility Queses and Types Harries	r or Operator: Certification of receipt of t	percolans materials core	red by the mer	Apple and the	e noted in De	m 180	2/				
	L	- 10mm		le		Van	ر به ۱	K	Mule		Mori	RU	114
	+011	n o / VV-222 (Rev. 3-05)	Privious editions are obsolete.		l	DESIGN	ATED F	NC LAY	TO DESTI	NATION	STATE (	f REQ	UIRE



# CERTIFICATE OF MANAGEMENT

This Certificate is to verify that the wastes specified on the following manifest(s) have been properly received and will be properly managed to meet all applicable local, state, and federal regulations.

Generator Name:	United States Coast Guard
Manifest/BOL Number:	010270182JJK
Approval Number(s):	F107164DET

FACILITY NAME: EQ DETROIT, INC.

EPA ID#:MID980991566

ADDRESS: 1923 Frederick

PHONE NUMBER: 313-347-1300

FAX NUMBER: 313.923.3375

AUTHORIZED SIGNATURE: Brittani Borends on behalf of EQ Detroit

ATTACHMENT C LABORATORY REPORTS



December 19, 2013

TETRA TECH NUS - Pittsburgh Attn: Mr. Joe Logan 661 Anderson Drive, Foster Plaza 7 Pittsburgh, PA 15220

#### **Project: USCG Atwater Facility**

Dear Mr. Joe Logan,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

**Work Order** 

Received

Description

1312099

12/06/2013

**Laboratory Services** 

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

DEP (#88-0730/12-056-0); Florida (#E87622-24); ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas Illinois DEP (#200026/003059); Kansas DPH (#E-10302); Kentucky DEP (#0021); Georgia EPD (#E87622-24); Minnesota DPH (#491715); New York ELAP (#11776/48855); Louisiana DEP (#83658); Michigan DPH (#0034); North Carolina DNRE (#659); Texas CEQ (#T104704495-13-3); Virginia DCLS (#460153/1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood Project Chemist



# PROJECT TECHNICAL NARRATIVE(s)

### Dissolved Metals by EPA 6000/7000 Series Methods

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL,

therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte: 1312099-03 DA-MW04-1213

Zinc



# PROJECT TECHNICAL NARRATIVE(s)

# Total Metals by EPA 6000/7000 Series Methods

Narrative: This analyte was not present in this sample at a concentration greater than 100 times the MDL,

therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte: 1312099-03 DA-MW04-1213

Zinc



### STATEMENT OF DATA QUALIFICATIONS

### Total Metals by EPA 6000/7000 Series Methods

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control

limit. The unspiked sample result is considered estimated.

Analysis: USEPA-6020A

1312099-03

Sample/Analyte: 1312099-03

DA-MW04-1213 DA-MW04-1213 Barlum

Zinc



### **ANALYTICAL REPORT**

Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-1213

Lab Sample ID: Matrix:

1312099-01

1313142

Water ug/L

1

Unit:

Dilution Factor:

QC Batch:

Work Order:

1312099

Description:

**Laboratory Services** 

Sampled:

12/4/13 12:50

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

Prepared: Analyzed: 12/9/13 7:52

ALK By: JLB By:

12/12/13 13:02

Analytical Batch: 3L16014

### Semivolatile Organic Compounds by EPA Method 8270C

	·	Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32-9	Acenaphthene	0.50U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene ·	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205- <del>99-</del> 2	Benzo(b)fluoranthene	0. <del>5</del> 0U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01- <del>9</del>	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
206-44-0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066
	•			

Surrogates:	% Recovery	Control Limits			
Nitrobenzene-d5	77	40-110			
2-Fluorobiphenyl	78	50-110			
o-Terphenyl	88	<i>50-135</i>			



#### **ANALYTICAL REPORT**

Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-1213

Lab Sample ID: Matrix: **1312099-01** Water

Work Order:

1312099

Description:

**Laboratory Services** 

Sampled:

12/4/13 12:50

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analyticai Result		RL	MDL.	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	1.2		1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 11:14	DSC	1313131
Barium	290		5.0	0.68	ug/L	5	USEPA-6020A	12/11/13 12:17	DSC	1313131
Cadmlum	0.20	U	0.20	0.038	ug/L	1 .	USEPA-6020A	12/11/13 11:14	DSC	1313131
Chromium	1.0	U	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 14:37	DSC	1313131
Copper	0.66	,	1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 11:14	DSC	1313131
Lead	1.0	U	1.0	0.15	ug/L	1 .	USEPA-6020A	12/11/13 11:14	DSC	1313131
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 14:20	DSC	1313164
Selenium	0.79	J	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 11:14	DSC	1313131
Silver	0.045	J	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:37	DSC	1313131
Zinc	6.6	J	10	1.5	ug/L	1	USEPA-6020A	12/11/13 11:14	DSC	1313131



### **ANALYTICAL REPORT**

Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-1213

Lab Sample ID:

1312099-01

Matrix:

Water

Work Order:

13120<del>99</del>

Description:

Laboratory Services

Sampled:

12/4/13 12:50

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	1.4		1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 10:30	DSC	1313133
Barium	300		5.0	0.68	ug/L	5	USEPA-6020A	12/11/13 10:50	DSC	1313133
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/11/13 10:30	DSC	1313133
Chromlum	1.0	U	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 10:30	DSC	1313133
Copper	1.3		1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 10:30	DSC	1313133
Lead	0.39	3	1.0	0.15	ug/L	1	USEPA-6020A	12/11/13 10:30	DSC	1313133
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 13:24	DSC	1313162
Selenium	0.55	J	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 10:30	DSC	1313133
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:05	DSC	1313133
Zinc	7.8	J	10	1.5	ug/L	1	USEPA-6020A	12/11/13 10:30	DSC	1313133



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-1213

Lab Sample ID:

1312099-02

Matrix:

Water

Unit:

ug/L 1

Dilution Factor: QC Batch:

1313142

Work Order:

1312099

Description:

Laboratory Services

Sampled:

12/4/13 12:40

Sampled By:

Mark Mengel

Received: Prepared:

Analyzed:

Analytical Batch:

12/6/13 9:30

12/9/13 7:52

By: ALK By: JLB

12/12/13 13:37

41415

....

3L16014

#### Semivolatile Organic Compounds by EPA Method 8270C

		<b>Analytical</b>		
CAS Number	Analyte	Result	RL	MDL
83-32 <del>-9</del>	Acenaphthene	0.50U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0. <b>50</b> U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205 <del>-99</del> -2	Benzo(b)fluoranthene	0. <b>5</b> 0U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0. <b>5</b> 0U	0.50	0.061
218-01- <del>9</del>	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
206-44-0	Fluoranthene	0. <b>5</b> 0U	0.50	0.063
86-73-7	Huorene	<b>0.50</b> U	. 0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0. <b>5</b> 0U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5		40-110
2-Fluorobiphenyl	<i>87</i>	<i>50-110</i>
o-Terphenyl	<i>99</i>	<i>50-135</i>



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-1213

Lab Sample ID: Matrix:

1312099-02

Water

Work Order:

1312099

Description:

**Laboratory Services** 

Sampled:

12/4/13 12:40

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Battch
Arsenic	0.51	J	1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 11:18	DSC	1313131
Barlum	53		1.0	0.14	ug/L	1	USEPA-6020A	12/11/13 11:18	DSC	1313131
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/11/13 11:18	DSC	1313131
Chromium	0.37	J	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 14:39	DSC	1313131
Copper	0.57	3	1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 11:18	DSC	1313131
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/11/13 11:18	DSC	1313131
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 14:25	DSC	1313164
Selenium	0.33	J	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 11:18	DSC	1313131
Silver	0.12	J	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:39	DSC	1313131
Zinc	5.6	J	10	1.5	ug/L	1	USEPA-6020A	12/11/13 11:18	DSC	1313131



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID: Lab Sample ID: DA-MW02R-1213

Matrix:

**1312099-02** Water

Work Order:

1312099

Description:

**Laboratory Services** 

Sampled:

12/4/13 12:40

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	0.63	J	1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 10:34	DSC	1313133
Barlum	54		1.0	0.14	ug/i_	1	USEPA-6020A	12/11/13 10:34	DSC	1313133
Cadmium	0.043	3	0.20	0.038	ug/L	1	USEPA-6020A	12/11/13 10:34	DSC	1313133
Chromium	0.39	J	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 10:34	DSC	1313133
Copper	0.57	J	1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 10:34	DSC	1313133
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/11/13 10:34	DSC	1313133
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 13:30	DSC	1313162
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 10:34	DSC	1313133
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:08	DSC	1313133
Zinc	6.0	3	10	1.5	ug/L	1	USEPA-6020A	12/11/13 10:34	DSC	1313133



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-1213

Lab Sample ID:

1312099-03

Matrix:

Water

Unit:

Dilution Factor:

ug/L

QC Batch:

1

1313142

Work Order:

1312099

Description:

**Laboratory Services** 

Sampled: Sampled By: 12/4/13 14:15 Mark Mengel

Received:

Prepared:

Analyzed:

12/6/13 9:30

12/9/13 7:52

ALK By:

12/12/13 14:12

JLB By:

Analytical Batch: 3L16014

#### **Semivolatile Organic Compounds by EPA Method 8270C**

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32 <del>-9</del>	Acenaphthene	<b>0.50</b> U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205-99-2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01-9	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
206-44-0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Fluorene	0. <b>5</b> 0U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0:50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>81</i>	40-110
2-Fluoroblphenyl	80	50-110
o-Tembenyl	92	50-135



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-1213

Lab Sample ID: Matrix: **1312099-03** Water Work Order:

1312099

Description:

**Laboratory Services** 

Sampled:

12/4/13 14:15

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	3.3		1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 11:22	DSC	1313131
Barium	170		5.0	0.68	ug/L	5	USEPA-6020A	12/11/13 12:21	DSC	1313131
Cadmium	0.075	,	0.20	0.038	ug/L	1	USEPA-6020A	12/11/13 11:22	DSC	1313131
Chromium	1.0	U	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 14:42	DSC	1313131
Copper	0.25	J	1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 11:22	DSC	1313131
Lead	1.4		1.0	0.15	ug/L	1	USEPA-6020A	12/11/13 11:22	DSC	1313131
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 14:31	DSC	1313164
Selenium	1.0	Ŋ	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 11:22	DSC	1313131
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:42	DSC	1313131
Zinc	84		50	7.5	ug/L	5	USEPA-6020A	12/11/13 12:21	DSC	1313131



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-1213

Lab Sample ID:

1312099-03

Matrix:

Water

Work Order:

1312099

Description:

**Laboratory Services** 

Sampled:

12/4/13 14:15

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL.	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	3.6		1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 10:37	DSC	1313133
*Barium	170		5.0	0.68	ug/L	5	USEPA-6020A	12/11/13 11:55	DSC	1313133
Cadmium	0.085	J	0.20	0.038	ug/L	1	USEPA-6020A	12/11/13 10:37	DSC	1313133
Chromium	0.35	3	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 10:37	DSC	1313133
Copper	0.43	3	1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 10:37	DSC	1313133
Lead	3.7		1.0	0.15	ug/L	1	USEPA-6020A	12/11/13 10:37	DSC	1313133
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 13:35	DSC	1313162
Selenium	0.37	J	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 10:37	DSC	1313133
Silver	0.20	υ	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:11	DSC	1313133
*Zinc	90		50	7.5	ug/L	5	USEPA-6020A	12/11/13 11:55	DSC	1313133



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD120413

Lab Sample ID: Matrix: 1312099-04

Unit:

Water

Dilution Factor:

ug/L 1

QC Batch:

-1313142 Work Order:

1312099

Description:

Laboratory Services

Sampled:

12/4/13 0:00

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

Prepared:

12/9/13 7:52

By: ALK

Analyzed:

12/12/13 14:47

By: JLB

Analytical Batch:

tch: 3L16014

#### Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32-9	Acenaphthene	0.50U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Arithracene	D.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205-99-2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01-9	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
206-44-0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	72	<b>40-110</b>
2-Fluoroblphenyl	71	50-110
o-Terphenyl	81	<i>50-135</i>



Client:

TETRA TECH NUS - Pittsburgh

Project:

USCG Atwater Facility

Client Sample ID:

DA-FD120413

Lab Sample ID:

1312099-04

Matrix:

Water

Work Order:

1312099

Description:

Laboratory Services

Sampled:

12/4/13 0:00

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL_	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	1.5		1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 11:40	DSC	1313131
Barium	300		5.0	0.68	ug/L	5	USEPA-6020A	12/11/13 12:47	DSC	1313131
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/11/13 11:40	DSC	1313131
Chromium	0.20	J	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 14:55	DSC	1313131
Copper	0.68	,	1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 11:40	DSC	1313131
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	12/11/13 11:40	DSC	1313131
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 14:48	DSC	1313164
Selenium	0.79	3	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 11:40	DSC	1313131
Silver	0.20	. U	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:55	DSC	1313131
Zinc	7.1	3	10	1.5	ug/L	1	USEPA-6020A	12/11/13 11:40	DSC	1313131



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD120413

Lab Sample ID: Matrix: 1312099-04

Water

Work Order:

1312099

Description:

**Laboratory Services** 

Sampled:

12/4/13 0:00

Sampled By:

Mark Mengel

Received:

12/6/13 9:30

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	1.3		1.0	0.18	ug/L	1	USEPA-6020A	12/11/13 10:56	DSC	1313133
Berlum	300		5.0	0.68	ug/L	5	USEPA-6020A	12/11/13 12:14	DSC	1313133
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	12/11/13 10:56	DSC	1313133
Chromium	1.0	U	1.0	0.20	ug/L	1	USEPA-6020A	12/11/13 10:56	DSC	1313133
Copper	1.2		1.0	0.13	ug/L	1	USEPA-6020A	12/11/13 10:56	DSC	1313133
Lead	0.41	3	1.0	0.15	ug/L	1	USEPA-6020A	12/11/13 10:56	DSC	1313133
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	12/11/13 14:03	DSC	1313162
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	12/11/13 10:56	DSC	1313133
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	12/11/13 14:24	DSC	1313133
Zinc	6.3	J	10	1.5	ug/L	1	USEPA-6020A	12/11/13 10:56	DSC	1313133

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Page 17 of 19

Corporate

ATTACHMENT D
DATA VALIDATION REPORT
(on pdf)

MARCH 2014 EVENT



#### **TETRA TECH**

661 Andersen Drive = Pittsburgh, Pennsylvania 15220-2745 (412) 921-7000 = FAX (412) 921-4040 = www.tetratech.com

PITT 04-14-002

May 1, 2014

Mr. James Cook Environmental Engineer USCG Civil Engineering Unit 1240 East Ninth St., Rm. 2179 Cleveland, OH 44199-2060

Reference:

Contract Number HSCG83-08-D-3CL109

Task Order Number HSCG83-09-J-3CL358

Subject:

Groundwater Monitoring Report (March 2014 Event and Annual Summary) for U.S.

**Coast Guard Atwater Facility** 

Dear Mr. Cook:

Tetra Tech, Inc. (Tt) is pleased to submit this quarterly Groundwater Monitoring Letter Report for the referenced Task Order for the United States Coast Guard (USCG) Atwater Facility in Detroit, Michigan. The objective of this portion of the project includes quarterly monitoring of the groundwater associated with the Atwater Facility (Figure 1) following the removal action conducted in April 2013. The sampling is being performed according to Modification 004 of the Task Order.

Four quarterly groundwater sampling events were planned. The first event was performed in June 2013, the second event was performed in September 2013, and the third event was performed in December 2013. The fourth and final event, described in this report, was performed in March 2014. Field activities and groundwater analytical results for the March 2014 event are summarized in this report. The report also summarizes any trends observed over the four events. The work was performed in accordance to the Field Sampling Plan - Soil and Groundwater (Tetra Tech, 2011) and the Quality Assurance Project Plan Addendum (Tetra Tech, 2011).

#### **FIELD OPERATIONS**

#### **Groundwater Sampling**

Depth-to-water measurements were obtained at the three monitoring wells and to the Detroit River on March 18, 2014. Water level depths in the wells ranged from 1.50 (MW01R) to 3.27 (MW04) feet below top of casing (BTOC). Groundwater elevation data is provided in Table 1.

The groundwater level elevations in the three wells were higher during the March 2014 event as compared to the December 2013 event (1.39 foot, 0.15 foot, and 0.63 foot, respectively). The river level elevation was also higher during the March 2014 event as compared to the December 2013 event (0.28 foot). The groundwater flow direction was toward the river.

On March 18, 2014, Tt collected groundwater samples from the three monitoring wells, MW01R, MW02R, and MW04. A duplicate sample was collected from MW01R. Samples were collected using low flow methods. Copies of the Groundwater Sample Log Sheets and Low Flow Purge Data Sheets are included in Attachment A. Following collection, the groundwater samples were shipped to Trimatrix Laboratories in Grand Rapids, Michigan for analysis of polynuclear aromatic hydrocarbons (PAHs) by EPA Method

SW846 8310 and for total and dissolved Michigan 10 metals by EPA Methods 6020A and 7470A. Groundwater for dissolved metals analyses was filtered in the field using a 0.45 micron filter. Purge water was drummed and was subsequently disposed of off-site by EarthSmart Environmental Solutions, LLC after confirming the results of the groundwater analyses (see Attachment B).

Groundwater samples were also analyzed for geochemical parameters using field kits and meters. The field kit analyses included dissolved oxygen (DO), alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate. The field meter measurements included pH and oxidation-reduction potential (ORP).

#### **RESULTS**

#### **Laboratory Results**

The analytical results for this event are summarized in Table 2. This table also includes the results from the previous sampling events. A copy of the laboratory summary report for this event is provided in Attachment C. The data validation report is included in Attachment D as a pdf file on a CD.

The PAH analytical results were not significantly different from the 2011/2012 sampling events and the June, September, and December 2013 events. For the March 2014 event, the PAHs were less than detection limits in the wells (like the December 2013 event). In the past four events, PAHs were not detected in MW01R and MW02R and only trace concentrations of two PAHs (benzo(a)anthracene and chrysene) were detected in MW04 detected during the June 2013 event. The concentrations of PAHs in the wells were less than the Michigan Department of Environmental Quality (MDEQ) residential exposure criteria.

At MW01R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW01, except for arsenic. The total arsenic concentrations (sample and duplicate) in the sample from MW01R were 2.6  $\mu$ g/L and 2.7  $\mu$ g/L, respectively, and the dissolved arsenic concentrations (sample and duplicate) were 2.0  $\mu$ g/L and 2.3  $\mu$ g/L, respectively. The range of total arsenic concentrations from the 2011/2012 samples from MW01 was 0.52  $\mu$ g/L to 1.5  $\mu$ g/L, and the range of dissolved arsenic concentrations was 0.6  $\mu$ g/L to 0.95  $\mu$ g/L. The March 2014 concentrations were slightly greater than the December 2013 concentrations and are less than those from the June 2013 event. Although the arsenic concentrations were elevated for this round, they are less than the United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) of 10  $\mu$ g/L.

At MW02R, the total metals concentrations and dissolved metals concentrations were similar to previous results at MW02. The total arsenic concentration in the sample from MW02R was estimated at 0.49  $\mu$ g/L, and the dissolved arsenic concentration was estimated at 0.44  $\mu$ g/L. The range of total arsenic concentrations from the 2011/2012 samples from MW02 was 6.2  $\mu$ g/L to 14  $\mu$ g/L, and the range of dissolved arsenic concentrations was estimated at 1  $\mu$ g/L to 12  $\mu$ g/L. The March 2014 arsenic concentrations were slightly less than the December 2013 concentrations and were similar to the June 2013 event concentrations. The arsenic concentrations for this round are less than the USEPA MCL of 10  $\mu$ g/L.

Total metals concentrations and dissolved metals concentrations in MW04 were generally similar to the previous results, except for arsenic. The total arsenic concentration in the sample was estimated at 0.76  $\mu$ g/L, and the dissolved arsenic concentration was estimated at 0.56  $\mu$ g/L, which were less than the concentrations in the December 2013 event (3.3  $\mu$ g/L and 3.6  $\mu$ g/L, respectively). The range of total arsenic concentrations from the 2011/2012 samples and the June 2013 event estimated at 0.87  $\mu$ g/L to 3.8  $\mu$ g/L, and the range of dissolved arsenic concentrations was estimated at 0.84  $\mu$ g/L to 3.6  $\mu$ g/L. The March 2014 arsenic concentrations were significantly less than the maximum value observed in September 2013 and are within the range of previous measurements. The March 2014 arsenic concentrations were less than the June 2013 concentrations and still less than the USEPA MCL of 10  $\mu$ g/L.

In summary, the concentrations of metals and PAHs of the four quarters of sampling were less than the selected criteria. For metals, only arsenic had concentrations greater than its MCL during previous sampling events. The arsenic concentrations for MW01R were initially high, but declined over the course of the sampling program. These concentrations were generally greater than the 2011/2012 results. However, this monitoring well is the upgradient well, and the results suggest a possible off-site source of arsenic. The arsenic results for MW02R were well below the MCL and were significantly less than the 2011/2012 results. The arsenic concentrations from MW04 showed more variability compared to the other wells, but ended with a downward trend. Except for one result, the concentrations were similar to those measured in 2011/2012:

The PAHs were less than the criteria, and the concentrations were less than detection limits during the last three sampling events, and there were only trace concentrations of two compounds in the first event.

#### **Field Measurements**

Groundwater samples were analyzed in the field using field kits and meters to evaluate the geochemistry and its effects on contaminant concentrations and the potential for biological activity. Samples were analyzed for DO, alkalinity, carbon dioxide, ferrous iron, sulfide, and sulfate with field kits, and pH and ORP were measured with field meters. These results are summarized on Table 3.

The results for MW01R continue to suggest anaerobic biological activity. The DO was low, and the ORP was negative. The ORP result was much more negative compared to previous measurements from MW01 and MW01R. Alkalinity, carbon dioxide, and ferrous iron concentrations were relatively high, which are also typical of anaerobic biological activity. Sulfide was detected. The sulfate concentration was greater than the last event, and the pH was in the neutral range.

The results from MW02R showed some differences from the last event. The DO was 1.5 mg/L, similar to the last event. The ORP was positive and greater than the last event. The ORP results from previous measurements at MW02 were negative. The alkalinity concentration was less than the result from MW01R, and the carbon dioxide concentration was approximately one third of the result from MW01R. The ferrous iron and sulfide concentrations were less than detection limits which suggests the absence of anaerobic activity. The sulfate concentration was slightly higher than the previous result, and the pH was in the neutral range.

The MW04 results showed differences from the last event. The DO was 2 mg/L compared to 0.5 to 1 mg/L in the previous events, and the ORP was 158 mV compared to the previous negative ORP results. The alkalinity and carbon dioxide concentrations were less than the last three events, and ferrous iron was not detected. No sulfide was detected, and the sulfate concentration was similar to the previous events and less than the concentration in both MW01R and MW02R. The pH was in the neutral range. The positive ORP, high DO, and absence of ferrous iron and sulfide suggest aerobic conditions. Unlike previous events, the results were not similar to the results from the upgradient well, MW01R. The low sulfate concentration suggests influence from off-site. As noted in the Removal Action Completion Report, the results of soil samples collected at the border of the site suggest that the adjacent property could be a source of organic contaminants.

In summary, over the course of the four sampling events, the field parameters showed variability and only a few conclusions about the geochemistry can be made:

- The results from the upgradient well MW01R suggest anaerobic biological activity which appears to originate from an off-site source.
- At MW02R, the changes in ORP from negative to positive (compared to the 2011/2012 data) and the absence of ferrous iron and sulfide suggest aerobic conditions and the absence of organic compounds in the groundwater.

 At MW04, the change in ORP from negative to positive and the absence of ferrous iron and sulfide in the final event suggest a change from anaerobic to aerobic conditions. However, contaminants observed in soil samples at the edge of the site suggest that site groundwater quality could be affected by off-site sources.

#### CONCLUSIONS AND RECOMMENDATIONS

Concentrations of PAHs and metals were less than USEPA and MDEQ criteria during this sampling event and the previous three events. PAH concentrations were generally less than detection limits. The arsenic concentrations in MW01R and MW02R were similar to the last event, and the arsenic concentrations in MW04 decreased further in the last event. The results of the geochemistry field measurements are not definitive, but suggest anaerobic biological activity off-site and a change from anaerobic conditions to aerobic conditions on-site. No further monitoring is recommend.

Should you have any questions, please contact the Project Manager, Mr. Joseph Logan at (412) 921-7231 or me at (412) 921-8415.

Very truly yours,

Roger A. Clark, Ph.D. Program Manager

**RAC** 

CC:

file 112G02435 Joseph Logan

#### WATER LEVEL MEASUREMENTS QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT **USCG ATWATER FACILITY** DETROIT, MICHIGAN

	Ground	Top of	Screene	d Interval	6/6/2	2011	9/14	/2011	12/16	/2011	3/6/2	2012	6/25	/2013	9/17	/2013	12/4	/2013	3/18/	/2014
Well ID	Surface Elevation (feet, NAVD 88)	Top of Casing (feet, NAVD 88)	Top (feet bgs)	Bottom (feet bgs)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)	Depth to Water (feet BTOC)	Water Level (feet, NAVD 88)
MW01	579.58	579.53	3.0	13.0	2.22	577.31	1.70	577.83	1.00	578.53	1.43	578.10	ABAN	-	ABAN	-	ABAN	-	ABAN	-
MW01R	579.69	579.49	3.0	13.0	-	1		-		-	-	-	2.63	576.86	4.02	575.47	2.89	576.60	1.50	577.99
MW02	579.54	579.62	3.0	13.0	3.95	575.67	3.32	576.30	3.20	576.42	3.42	576.20	ABAN		ABAN	-	ABAN		ABAN	-
MW02R	579.07	578.83	3.0	13.0		-	-	•	-		-	-	2.67	576.16	3.42	575.41	2.20	576.63	2.05	576.78
MW03	579.33	579.00	3.0	13.0	3.89	575.11	3.94	575.06	4.08	574.92	4.26	574.74	ABAN	-	ABAN	-	ABAN	-	ABAN	-
MW04	578.68	578.11	3.0	13.0	3.18	574.93	3.05	575.06	2.49	575.62	3.30	574.81	3.58	574.53	3.80	574.31	3.90	574.21	3.27	574.84
River Level	578.69	NA	NA	NA	3.85	574.84	4.50	574.19	4.20	574.49	4.78	573.91	NM	NM	4.95	573.74	5.70	572.99	5.42	573.27

Notes:

bgs - below ground
ABAN - Abandoned.
BTOC - below top of casing.
NA - Not Applicable.
NAVD - North American Vertical Datum.
NM - Not measured.

# SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 1 OF 4

LOCATION	<u> </u>	1		<u> </u>		DAM	W01		Ι			DAMV	V01R			
SAMPLE DATE	Federal	Michigan	Michigan	Selected	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013	6/25/2013-D	9/17/2013	9/17/2013-D	12/4/2013	12/4/2013-D	3/18/2014	3/18/2014-D
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)		13	13	13	13	13	13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)	·				- American	A STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STA			and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th	11 (000)		21,000		400		
ARSENIC	10	10	10	10	0.95 J	0.73 J	0.36 J	0.6 J	5	4.9	2.8	3.1	1.2	1.5	2	2.3
BARIUM	2000	2000	670	2000	190 J	300	260	250	300	290	300 J	320 J	290	300	230	250
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.14 J	0.2 U	0.1 U	0.1 U	0.1 Ü	0.1 U_	0.1 U	0.1 U	0.1 U	0.1 U
CHROMIUM	100	100	100	100	0.3 J	0.27 J	1 U	1 Ú	0.71 U	0.86 U	0.38 J	0.4 J	0.5 U	0.2 J	0.3 J	0.5 U
COPPER	1300	1000	13	1300	0.44 J	0.61 J	0.28 J	1 U	0.73 J	0.55 J	0.94 J	0.78 J	0.66 J	0.68 J	0.74 J	0.66 J
LEAD	15	2	14	15	0.17 J	0.18 J	1 U	1 UJ	0.56 J	0.41 J	0.5 U	0.5 U_	0.5 U	0.5 U	0.5 U	0.5 U
SELENIUM	50	50	5	50	5 UJ	1.1 J	5 U	5 U	1 U	1 U	1 U	1 U	0.79 J	0.79 J	0.6 U	1.2 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.045 J	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	5.5	6.7	6.5 U	10 U	7 J	2.9 J	2.9 J	4.5 J	6.6 J	7.1 J	1.7 J	2.5 J
METALS (UG/L)		_		***************************************	3 · · · ·	- decoders			-	And comment		1	!			***************************************
ARSENIC	10	10	10	10	1.5 J	1 J	0.52 J	0.63 J	4.6	5.1	3.2	3.5	1.4	1.3	2.6	2.7
BARIUM	2000	2000	670	2000	210	300	260	240	290	300	310 J	310 J	300 J	300 J	230	230
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.79 J	0.06 J	0.044 J	0.04 J	0.039 J	0.1 U	0.1 U	0.1 U	0.043 J	0.1 U
CHROMIUM	100	100	100	100	0.31 J	0.25 J	0.57 J	1 U	0.54 J	0.54 J	0.5 J	0.46 J	0.5 U	0.5 U	0.33 J	0.3 J
COPPER	1300	1000	13	1300	0.74 J	0.79 J	0.98 J	1 U	0.71 J	0.81 J	0.9 J	0.42 J	1.3	1.2	1.1	1
LEAD	15	2	14	15	0.73 J	11	0.63 J	0.26 J	2	2.1	0.15 J	0.5 U	0.39 J	0.41 J	0.23 J	0.23 J
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	5 U	0.69 U	1 U	1 U	1 U	0.55 J	1 U	0.92 U	1.4 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.055 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	6.9 J	9.4	10	4 J	2.7 J	4.7 J	4.5 J	5.2 J	7.8 J	6.3 J	4.4 J	3.4 J
POLYNUCLEAR AROMATIC HYDR	ROCARBON				2-0	At AMANA,	· ·		agenous.		ļ				İ	
2-METHYLNAPHTHALENE	NC	260	19	260	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	0.5 U	0.031 J	0.5 U	0.03 J	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	0.5 U	0.5 U	0.5 U	0.5 U	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC NC	2	ID	2	0.5 U	0.5 U	0.051 J	0.06 J	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.1 J	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.041 J	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.5 Ü	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.22 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	0.5 U	0.5 U	0.5 U	0.04 J	0.054 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.5 U	0.5 U	0.5 U	0.5 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

- 1 For comparison only.
- J Estimated Concentration.
- U Below detection limit at detection limit shown.
- D Duplicate sample

Shaded cell indicates concentration greater than selected criterion.

- bgs Below ground surface.
- GSI Groundwater-surface water interface
- ID Insufficient data to develop criterion.
- MCL Maximum Contaminant Level.
- NC No criterion.
- RBSL Risk-Based Screening Level

## SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 2 OF 4

LOCATION							DAN	1W02				DAM	W02R	
SAMPLE DATE	Federal	Michigan	Michigan	Selected	6/6/2011	9/14/2011	12/16/2011		3/6/2012	3/6/2012-D	6/25/2013	9/17/2013	12/4/2013	3/18/2014
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)		13	13	13	13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)					Popper	And at		-		a de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de l	*	1, 24,	To produce the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	
ARSENIC	10	10	10	10	1 J	9	9.3	9.2	12	12	0.55 J	1.5	0.51 J	0.44 U
BARIUM	2000	2000	670	2000	200 J	150	110	100	87	89	100	77 J	53	42
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.058 J	0.046 J	0.2 U	0.2 U	0.1 U	0.1 U	0.1 U	0.073 J
CHROMIUM	100	100	100	100	0.47 J	0.45 J	0.36 J	0.37 J	1 U	1 U	0.79 U	0.27 J	0.37 J	0.97 J
COPPER	1300	1000	13	1300	0.42 J	0.16 J	1 U	0.28 J	1 U	1 U	1.3	0.8 J	0.57 J	1.2
LEAD	15	2	14	15	0.2 J	1 U	1 U	1 U	1 UJ	1 UJ	0.5 ป	0.5 U	0.5 U	0.5 U
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	5 U	0.39 J	1.3 J	1.4 U	1 Ü	0.33 J	1 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.12 J	0.1 U
ZINC	NC	2400	170	2400	5 U	5 U	6.9 U	7.8 U	10 U	10 U	3.7 J	5.7 J	5.6 J	6.4 J
METALS (UG/L)						a pulsary a			- The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec		l	and the	1	
ARSENIC	10	_ 10	10	10	6.2	12	9.5	10	14	14	0.58 J	1.4	0.63 J	0.49 U
BARIUM	2000	2000	670	2000	150	160	110	110	86	84	110	75 J	54 J	42
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.73 J	0.054 J	0.1 J	0.11 J	0.042 J	0.1 U	0.043 J	0.1 J
CHROMIUM	100	100	100	100	0.33 J	0.51 J	0.39 J	0.38 J	1 U	1.3 U	0.98 J	0.22 J	0.39 J	0.94 J
COPPER	1300	1000	13	1300	1.2	_0.29 J	0.19 J	0.39 J	1 U	1 U	1.3	0.8 J	0.57 J	1.1
LEAD	15	2	14	15	0.85 J	0.39 J	0.16 J	0.23 J	<u>1 U</u>	1 U	0.5 U	0.5 U	0.5 U	0.5 U
SELENIUM	50	50	5	50	1 J	1.5 J	5 U	5 U	5 U	0.55 J	1 U	1 U	1 U	0.86 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	3.9 J	6.4	8.6	10	7.6 J	3.2 J	2.8 J	4.8 J	6 J	2 J
POLYNUCLEAR AROMATIC HYDR								4	3	g a g in a g				
2-METHYLNAPHTHALENE	NC	260	19	260	24 J	43	42	33	50	49	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	6 J	14	10	7.7 J	6.9	6.6	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	1.7 J	3.8 J	3.7 J	2.6 J	3.9 J	3.7 J	0.05 U	0.05 U	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	3.8 J	4.8 J	3.1 J	2.2 J	6.3	4.6 J	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID.	2	0.28 J	1.3 J	1.2 J	10 U	0.92 J	0.72 J	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 UJ	1 J	10 U	10 U_	5 U	5 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC	. 1	NC	1	0.05 J	12 U	10 U	10 U	0.41 J	5 U	0.1 U	0.1 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.1 J	12 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.52 J	1.5 J	1 J	0.81 J	0.92 J	0.82 J	0.1 U	0.1 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	3.5 J	13	24	19	21	21	0.1 U	0.1 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 UJ	12 U	10 U	10 U	5 U	5 U	0.2 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	120	170	170	130	180	180	0.05 U	0.05 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	8.8 J	11 J	11	8.3 J	12	12	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.39 J	1.5 J	1 J	10 U	0.92 J	0.82 J	0.1 U	0.1 U	0.1 U	0.1 U

- 1 For comparison only.
- J Estimated Concentration
- U Below detection limit at detection limit shown.
- D Duplicate sample

Shaded cell indicates concentration greater than selected criterion.

- bgs Below ground surface.
- GSI Groundwater-surface water interface
- ID Insufficient data to develop criterion.
- MCL Maximum Contaminant Level.
- NC No criterion.
- RBSL Risk-Based Screening Level

#### SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 3 OF 4

LOCATION		T		Γ			DAM	IW03		
SAMPLE DATE	Federal	Michigan	Michigan	Selected	6/6/2011	6/6/2011-D	9/14/2011	9/14/2011-D	12/16/2011	3/6/2012
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)		13	13	13	13	13	13
DISSOLVED METALS (UG/L)				<u></u>		1 !	· · · · · · · · · · · · · · · · · · ·	10	i	
ARSENIC	10	10	10	10	2.7 J	2.7 J	4.3 J	4.1 J	1.3 J	0.71 J
BARIUM	2000	2000	670	2000	310 J	300 J	370	360	310	270
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2.U
CHROMIUM	100	100	100	100	0.21 J	1 U	0.22 J	0.23 J	1 U	1 U
COPPER	1300	1000	13	1300	1 U	1 U	1 U	0.15 J	0.25 J	1 U
LEAD	15	2	14	15	1 U	1 U	1 U	1 U	1 U	1 UJ
SELENIUM	50	50	5	50	5 UJ	5 UJ	0.97 J	0.96 J	5 U	5 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ZINC	NC	2400	170	2400	4.2 J	3.9 J	5.5	5 U	7.7 U	10 U
METALS (UG/L)			····			V C PALL PALL			110	
ARSENIC	10	10	10	10	2.6 J	2.5 J	4.8 J	4.4 J	1.3 J	0.75 J
BARIUM	2000	2000	670	2000	290	290	370	340	300	270
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.37 U	1.1 J	0.051 J	0.2 U
CHROMIUM	100	100	100	100	0.29 J	0.27 J	0.24 J	0.24 J	0.22 J	1 U
COPPER	1300	1000	13	1300	0.77 J	1 U	0.3 J	0.37 J	0.39 J	1 U
LEAD	15	2	14	15	0.47 J	0.33 J	0.7 J	0.57 J	1.2	0.18 J
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ZINC	NC	2400	170	2400	8.5 J	4.6 J	10	8.4	8.4	2 J
POLYNUCLEAR AROMATIC HYDR	ROCARBON				Tababase .					-
2-METHYLNAPHTHALENE	NC	260	19	260	0.07 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ACENAPHTHENE	NC	1300	38	1300	1.6	1.6	2.6	2.9	1.5	1.6
ACENAPHTHYLENE	NC	52	ID	52	0.05 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ANTHRACENE	NC	43	ID	43	0.22 J	0.19 J	0.23 J	0.23 J	0.092 J	0.13 J
BENZO(A)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.072 J	0.051 J	0.041 J	0.051 J
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.052 J	0.5 U	0.5 U	0.5 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZO(K)FLUORANTHENE	NC	1	NC	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.082 J
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
FLUORANTHENE	NC	210	1.6	210	0.2 J	0.15 J	0.27 J	0.23 J	0.11 J	0.11 J
FLUORENE	NC	880	12	880	0.36 J	0.27 J	0.19 J	0.28 J	0.13 J	0.13 J
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.14 J
NAPHTHALENE	NC	520	11	520	0.19 J	0.11 J	0.062 J	0.5 U	0.5 U	0.5 U
PHENANTHRENE	NC	52	2	52	1.2	1	1.4	1.5	0.6	0.67
PYRENE	NC	140	ID	140	0.15 J	0.13 J	0.23 J	0.24 J	0.1 J	0.082 J

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- D Duplicate sample

Shaded cell indicates concentration greater than selected criterion. bgs - Below ground surface.

- GSI Groundwater-surface water interface
- ID Insufficient data to develop criterion.
- MCL Maximum Contaminant Level.
- NC No criterion.
- RBSL Risk-Based Screening Level

#### SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER **QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY** DETROIT, MICHIGAN PAGE 4 OF 4

LOCATION		Batta Linear	Minhiman	]				DAM	W04			
SAMPLE DATE	Federal	Michigan	Michigan	Selected	6/6/2011	9/14/2011	12/16/2011	3/6/2012	6/25/2013	9/17/2013	12/4/2013	3/18/2014
TOP OF SCREEN, FEET bgs	MCL	Residential	GSI RBSL	Criteria	3	3	3	3	3	3	3	3
BOTTOM OF SCREEN, FEET bgs		RBSL	(1)		13	13	13	13	13	13	13	13
DISSOLVED METALS (UG/L)	<del></del>					no de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de			-	0.00		i
ARSENIC	10	10	10	10	3 J	3.6 J	1.2 J	0.84 J	1.9	7	3.3	0.56 U
BARIUM	2000	2000	670	2000	150 J	210	130	130	190	190 J	170	99
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.2 U	0.19 J	0.31	0.1 U	0.075 J	0.27
CHROMIUM	100	100	100	100	1 U	1 U	0.23 J	1 U	0.83 Ū	0.5 U	0.5 U	0.43 J
COPPER	1300	1000	13	1300	0.88 J	0.6 J	0.32 J	1 U	1.9	0.44 J	0.25 J	3.4
LEAD	15	2	14	15	0.44 J	0.45 J	0.17 J	2.8 J	3	1.2	1.4	1.4
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	0.73 J	2.6	1 U	1 U	10
SILVER	NC	34	0.2	_34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	110	100	100	140	180	94 J	84	99 J
METALS (UG/L)				·		** ***		1		200	-	and the second
ARSENIC	10	10	10	10	3 J	3.8 J	1.1 J	0.87 J	1.4	7.3	3.6	0.76 U
BARIUM	2000	2000	670	2000	150	210	130	130	190	190 J	170 J	99
CADMIUM	5	5	2.5	5	0.2 U	0.2 U	0.091 J	0.25	0.34	0.1 U	0.085 J	0.29
CHROMIUM	100	100	100	100	0.36 J	1 U	1 U	1 U	0.71 J	0.21 J	0.35 J	0.42 J
COPPER	1300	1000	13	1300	2.6	1.8	0.64 J	1 U	1.4	0.45 J	0.43 J	3.8
LEAD	15	2	14	15	2.1	3.3	1.8	2.8	3.8	2.4	3.7	3.5
SELENIUM	50	50	5	50	5 UJ	5 UJ	5 U	0.79 J	4.9	1 U	0.37 J	9.4
SILVER	NC	34	0.2	34	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
ZINC	NC	2400	170	2400	110 J	120	110	150	190	99 J	90 J	99
POLYNUCLEAR AROMATIC HYDR								į	4	100		1
2-METHYLNAPHTHALENE	NC	260	19	260	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHENE	NC	1300	38	1300	0.05 J	0.03 J	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U	0.05 U
ACENAPHTHYLENE	NC	52	ID	52	0.5 U	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U	0.05 U
ANTHRACENE	NC	43	ID	43	0.5 U	0.5 U	0.5 U	0.5 U_	0.1 Ü	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	NC	2	ID.	2	0.5 U	0.5 U	0.19 J	0.5 U	0.062 J	0.1 U	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	5	ID	0.2	0.5 U	0.5 U	0.24 J	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	NC	1.5	ID	1.5	0.5 U	0.5 U	0.22 J	0.5 U	0.1 U_	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	NC	1 1	NC	1	0.5 U	0.5 U	0.27 J	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
CHRYSENE	NC	1.6	ID	1.6	0.5 U	0.5 U	0.22 J	0.5 U	0.052 J	0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	NC	2	ID	2	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	NC	210	1.6	210	0.5 U	0.5 U	0.04 J	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
FLUORENE	NC	880	12	880	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	NC	2	ID	2	0.5 U	0.5 U	0.14 J	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	NC	520	11	520	0.05 J	0.5 U	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U	0.05 U
PHENANTHRENE	NC	52	2	52	0.05 J	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	NC	140	ID	140	0.04 J	0.5 U	0.061 J	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U

- 1 For comparison only.
- J Estimated Concentration.
- U Below detection limit at detection limit shown.
- D Duplicate sample

Shaded cell indicates concentration greater than selected criterion. bgs - Below ground surface.

- GSI Groundwater-surface water interface
- ID Insufficient data to develop criterion.
- MCL Maximum Contaminant Level.
- NC No criterion.

RBSL - Risk-Based Screening Level

# SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 1 OF 4

LOCATION		DAN	IW01			DAM	W01R	
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13	12/4/13	3/18/14
Appearance	clear	clear	clear	clear	clear	clear	clear	clear
	·							:
Purge Meter Measurements		*						
pH (SU)	6.8	6.5	6.8	7.0	7.0	6.6	7.2	7.0
Specific Conductivity (mS/cm)	0.992	1.04	1.08	1.02	0.922	1.13	1.04	0.799
Temperature (°C)	18.4	20.3	9.5	7.0	19.3	19.3	11.3	8.2
Turbidity (NTU)	0.0	0.0	8.8	5.1	7.4	1.0	0.0	9.7
Dissolved Oxygen (mg/L)	0.0	0.26	0.0	2.08	0.38	0.39	0.7	5.4
ORP (mV)	-176	-158	-204	-98	-84	-122	-213	-206
Field Test Kits								
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	0.9	0.7	0.9	1
Alkalinity (ppm)	NM	NM	NM	NM	375	350	300	400
Carbon Dioxide (ppm)	NM	NM	NM	NM	75	85	110	35
Ferrous Iron (ppm)	NM	NM	NM	NM	1.4	2.3	1.2	1
Sulfide (ppm)	NM	NM	NM	NM	0.05	0.9	0.9	0.7
Sulfate (ppm)	NM	NM	NM	NM	51.	8	55	. 72

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

TABLE 3

## SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 2 OF 4

LOCATION		DAN	1W02			DAM	W02R	
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13	12/4/13	3/18/14
Appearance	clear	clear	clear	clear	clear	clear	clear	clear
		· .		w/black				
			<u></u>	specks				
Purge Meter Measurements								
pH (SU)	7.7	7.3	7.6	8.1	7.3	7.8	7.2	6.9
Specific Conductivity (mS/cm)	1.49	1.38	1.48	1.27	0.554	0.564	0.620	0.648
Temperature (°C)	12.5	19.0	10.4	8.8	20.1	18.1	11.1	5.8
Turbidity (NTU)	0.0	1.7	1.2	1.5	3.2	0.0	2.9	0.7
Dissolved Oxygen (mg/L)	0.0	0.37	0.0	1.55	1.51	0.47	1.61	4.55
ORP (mV)	-192	-297	-294	-255	43	-28	51	193
Field Test Kits							<del>*                                    </del>	
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	2.7	1.5	1	1.5
Alkalinity (ppm)	NM	NM	NM	NM	180	500	190	250
Carbon Dioxide (ppm)	NM	NM	NM	NM	26	25	11	13
Ferrous Iron (ppm)	NM	NM	NM	NM	0	0.1	0	0
Sulfide (ppm)	NM	NM	NM	NM	0	0	0	0
Sulfate (ppm)	NM	NM	NM	NM	31	37	41	68

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

#### SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER **QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN**

PAGE 3 OF 4

LOCATION		DAN	W03	
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12
Appearance	clear	clear	clear	clear
Purge Meter Measurements				
pH (SU)	7.2	6.7	6.5	7.2
Specific Conductivity (mS/cm)	0.925	0.99	1.06	0.992
Temperature (°C)	12.5	21.8	10.6	8.8
Turbidity (NTU)	0.7	1.3	4.5	0.5
Dissolved Oxygen (mg/L)	0.0	0.0	0.0	0.0
ORP (mV)	-107	-92	-74	-123
Field Test Kits				
Dissolved Oxygen (mg/L)	NM	NM	NM	NM
Alkalinity (ppm)	NM	NM	NM	NM
Carbon Dioxide (ppm)	NM	NM	NM	NM
Ferrous Iron (ppm)	NM	NM	NM	NM
Sulfide (ppm)	NM	NM	NM	NM
Sulfate (ppm)	NM	NM	NM	NM

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

## SUMMARY OF FIELD WATER QUALITY PARAMETERS IN GROUNDWATER QUARTERLY MONITORING REPORT FOR MARCH 2014 EVENT USCG ATWATER FACILITY DETROIT, MICHIGAN

PAGE 4 OF 4

LOCATION				DAN	IW04			
SAMPLE DATE	6/6/11	9/14/11	12/16/11	3/6/12	6/25/13	9/17/13	12/4/13	3/18/14
Appearance	clear	clear	clear	clear	clear	clear	clear	clear
Purge Meter Measurements					<u> </u>			<b></b>
pH (SU)	7.3	6.7	6.7	7.1	6.9	7.3	7.0	6.7
Specific Conductivity (mS/cm)	0.694	0.863	0.71	0.664	0.772	0.794	0.652	0.545
Temperature (°C)	16.1	22.8	11.0	8.4	16.7	20.8	13.9	6.4
Turbidity (NTU)	1.7	0.0	3.6	0	0	0	0.15	7.6
Dissolved Oxygen (mg/L)	0.0	0.0	0.0	0.0	5.48	0.47	1.17	5.6
ORP (mV)	-53	-21	-24	-15	64	-46	-45	158
Field Test Kits								
Dissolved Oxygen (mg/L)	NM	NM	NM	NM	1;	0.7	0.5	2
Alkalinity (ppm)	NM	NM	NM	NM	400	360	300	190
Carbon Dioxide (ppm)	NM	NM	NM	NM	60	75	31	13
Ferrous Iron (ppm)	NM	NM	NM	NM	0.4	1.4	1.2	0
Sulfide (ppm)	NM	NM	NM	NM	0	0	.0	
Sulfate (ppm)	NM	NM	NM	NM	>80	26	15	24

mg/L - milligrams per liter.

mS/cm - millisiemens per centimeter.

mV - millivolts.

NM - Not measured.

NTU - nephelometric turbidity units.

ORP - Oxidation-reduction potential.

ppm - parts per million.

FIGURE

ATTACHMENT A
SAMPLING FIELD FORMS

#### **GROUNDWATER SAMPLE LOG SHEET**

Tetra Tech Inc.
-----------------

Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.:

112G02435

										•			
Sample ID	<b>):</b>	DA-MW01	R-0314			Sampled	By:	T. ROJA	ΗŅ				
QA/QC Du	plicate ID:	DA-F	D-0318	14		Sample D	ate:	03/18/14					
MS/MSD (		YES	(NO)			Sample T		1300					
WELLINFO	PHATION:					V WE SE							
Well ID:						Purge Da		03/18/14					
Well Diam		2"	<del></del>	<del></del>			ter Level (fi		1.50				
	reen (ft-BT		3'				tor Reading		<del></del>				
	Screen (ft-	(4) (4)	13			Purge Me		Peristaltic	Pump				
	Depth (ft-E		13'			Sample N		Peristaltic					
		•		* 14 b. 30							10 Mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar 10 mar		
	ality instrur		CRIBA	<i>ù-5</i> ℃		Pump Co							
Turbidity		nent. 77		4-350	0/2114	rump co	nu oner.	FER IS IN	LTIC -	GEOPUI	<u> </u>		
				China Call Line Storie		THE WALL THE TANK	or a transfer of the second	1097 <b>3</b> West Side	e. Pristre estiliable	mieralia en mateu			
Time	H ² 0 Level	Flow	Color		s.c.	DO	Turbidity		ORP		Other		
(Hrs)	(ft-BTOR)	mL/min.		<b>pH</b> (S.U.)	(mS/cm)	(mg/L)	(NTU)	Temp. (C°)	(mV)	(% o ppt)	1/21 (m1)		
1205	1.50	0		•			_	-	-		-		
1215	1.95	150	CLEAR	7.//	0.814	8.92	41.8	8.77	-159	0.4	1500		
1225	201	150	CIEAR	7.08	0.8i4	8. <b>0</b> 7	26.5	8 33	-191	0.4	3cmo		
1235	235 203 150 CLEAR 7.06 08						16.8	8.19	- 199	0.4	4500		
i245	2.03	150	CLEAR	7.06	0,806	5.43	15.4	8.11	-2:4	0.4	ළ ලෙද		
1250	2.03	150	CLEAC	703	<b>0</b> 800	568	100	3:12	-207	0.4	6750		
1255						5.41	9.7	8.21	- 206	04	7500		
1300						_	~	-	_	-	_		
					T .								
								·					
<u> </u>										,			
						:	<del></del>		-				
					<del> </del>				<u> </u>	-			
FINAL PLIF	GE7 SAMP	LE DATA:		T WENT AND				P. S. S. Market					
Start	End	Total	Total YoL	рН	s.c.	DO	Turbidity	Тетр.	ORP	Salinity	Other		
Purge	Purge	(min.)	(gal(/L.)	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% o(ppt))			
1205	1300	50	7.5	7.03	0.799	5.41	9.7	8.21	-206	0.4	-:		
ANALYSIS	PRESERV	ATION AND	BOTTLER			<b>机弹用温度</b>					PART LAN		
Ana	lysis		Method		Preser	vative	Number	Vol.	Bottle T	уре	Collected		
PA	Hs .	5	See lab Spe	c	4°	C	2	1 L	Ambei	Glass	V		
Total	Metals	5	See lab Spe		HÌN	103	1	250 ml	Pla	stic			
Dissolve	d Metals	1	See lab Spe		HN	103	1	250 ml	<del>,</del>	stic	/		
										··			
							<del></del>						
	-				<del>                                     </del>	····	<u> </u>						
	<del></del>				<del> </del>				-		,		
		<u> </u>											
<b></b>		<u> </u>			<del>                                     </del>								
<u> </u>													
OBCCOVE:		200 State (100 to 2	The Control of the Control	THE OF THE PERSON	State : Markagares a	General de la composit	THOSE SAMES	CONTRACTOR OF CO.	Since Garage managers	CHICAGO, ASSESSION N	THE SHAREST A		
	BSERVATIONS / NOTES:						<b>经企业的企业</b>		of the said	CE SHAP	100		
2114	2114-HORIBA ID I								•		İ		
- '	_												
											ľ		
Coord	inates:	,	N		E	Signature(s):							
	Coordinates: N E						Topicone						



## FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS,	INC.							Page of	<del></del>
Project Site I	Name:	USCG De	troit			Sample ID No	DA-N	AWOIR-O	314
Project No.:		112G0243	15			Sample Loca			
Sampled By:	7.	ROSAM	1	•		Duplicate:			
Field Analyst		ME		•		Blank:		•	
Field Form C	hecked as per C	A/QC Che	cklist (initia	als):	TR	]			
SAMPLING DATA					llijinnisty i je s	nie milita idsin			Ne , (Milliana)
Date: 3-18	3-14	Color	рH	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 13	00	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	PP+(%)-	(+/- mv)
Method: PER	istaltic	CLEAR	7.03	0.799	8.21	9.7	5.41	0.4	-206
SAMPLE COLLE	CTION/ANALYSIS I	NFORMATIO							
ORP (Eh) (+/-	mv)		Electrode N	Make & Mod	lei: <i>Hor</i>	18A U.	52 SE	2165 4-5	7000
		<u></u>	Reference	Electrode (	circle one): S	Silver-Silver Chloric	de / Calomei .	Hydrogen /	latinum
Dissolved Ox	ygen:			•	-	•	4		
Equipment: Chem	netrics Test Kit					Concentration:		ppm	
Range Used:	Range	Method	Concentrat	ion ppm					
<u>P</u>	0 to 1 ppm	K-7501	/			Analysis Time:	1353		
	1 to 12 ppm	K-7512	1			•		-	
					•				
Notes:									
Alkalinity:						-			
Equipment: Chem	netrics Test Kit					Concentration:	400	ppm	
Range Used:	Range	Method	Concentrat	ion ppm					
	10 to 100 ppm	K-9810				Analysis Time:	1400		
	50 to 500 ppm	K-9815				•		•	
¥	100 to 1000 ppm	K-9820	4	00				Filtered	: 🗆 📗
Notes:									
Carbon Dioxi	de:								
Equipment: Chem	netrics Test Kit					Concentration:		ppm	
Range Used:	Range	Method	Concentrat	ion ppm		Analysis Time:	1407	_	
4	10 to 100 ppm	K-1910	3	5			_		
	100 to 1000 ppm	K-1920							
	250 to 2500 ppm	K-1925	<u> </u>						i
Notes:	· · · · · · · · · · · · · · · · · · ·	. •							
Ferrous Iron	(Fe ²⁺ ):						, ,		
Equipment	HACH IR-18C C	Color Wheel	Range. 0 -	10 mg/L		Concentration:	1.0	ppm	
						Analysis Time:	1311		
Notes:								Filtered:	
Sulfide (S ² ):									
Equipment: Chem	etrics Test Kit				i	Concentration:	0.7	ppm	
Range Used:	Range	Method	Concentrati	ion ppm	•			<u>.</u>	
	0 to 1 ppm	K-9510				Analysis Time:	1325		
	1 to 10 ppm	K-9510	1	•		-		•	
Notes					I				- 1



### FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 2 of 2

Project Site Name:	USCG Detroit	Sample ID No.:	DA-MWOIR-0314
Project No.:	112G02435	Sample Location	n: Detecit - Atwater
Sampled By:	T. ROJAHU	Duplicate:	_
Field Analyst:	SAME	Blank:	
Field Form Checked	as per QA/QC Checklist (initials): 7	R	
Sulfate (SO ₄ 2):			· · · · · · · · · · · · · · · · · · ·
Equipment HACH DF	3/890 Range: 2-70 mg/L	Concentration:	7 <i>Z</i> ppm
Program/Module: 92		. —	
		Analysis Time:	1305
Notes:			Filtered:
QA/QC Checklist:			
All data fields have been o	completed as necessary:	•	
Correct measurement unit	ts are cited in the SAMPLING DATA block	c	
Values cited in the SAMP	LING DATA block are consistent with the	Groundwater Sample Log Sheet	:
Final calulated concentrat	tion is within the appropriate Range Used	block:	·
Title block on each page of	of form is initialized by person who perform	ed this QA/QC Checklist:	

#### **GROUNDWATER SAMPLE LOG SHEET**

Tetra	a Tech inc.
Sample ID:	DA MAN

Event:

Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.: 112G02435

1240	2.61	160	CHAR	6.94	0.648	4.53	0.9	6.02	199	0.3	· · · · · · · · · · · · · · · · · · ·
1250	2.01	160	LICAR	6.94	0.645	4.55	Č:7	5.76	193	0.3	
	<del> </del>	<u> </u>	<del>'</del>		<del>                                     </del>					<del>                                     </del>	
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						-			_		
<del></del>			· · · ·		ļ	-				<del> </del>	
NAL PLI	RGE/SAME	E DATA									
Start	End	Total	Total Vol.	рН	S.C.	DO	Turbidity	Temp.	ORP	Salinity	Other
Purge	Purge	(min.)	(gal. (L.)	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)	
	1250	50	8	6.94	0.48	4.55	0.7	5.76	193	0.3	
			مرے استدارات ا	FOURME	VIS TO THE		題では	四時間 14	MAN PURPLE	N 3 F SEL	
NALYSIS	PRESERV	ATION AME								_ · I	Callagian
Ana	PRESERV		Method		Preser		Number	Vol.	Bottle '		Collected
NALYSIS Ana PA	PRESERV Ilysis \Hs		Method See lab Spe	ec	Preser 4°	С	2	1 L	Ambe	r Glass	سما
NALTYSIS Ana PA Total	PRESERV Ilysis AHs Metals		Method See lab Spe See lab Spe	9C	Presen 4° HN	C 103	2	1 L 250 ml	Ambe Pla	r Glass astic	4
NALYSIS Ana PA Total	PRESERV Ilysis \Hs		Method See lab Spe	9C	Presen 4° HN	С	2	1 L	Ambe Pla	r Glass	سا
Ana PA Total	PRESERV Ilysis AHs Metals		Method See lab Spe See lab Spe	9C	Presen 4° HN	C 103	2	1 L 250 ml	Ambe Pla	r Glass astic	4
Ana PA Total	PRESERV Ilysis AHs Metals		Method See lab Spe See lab Spe	9C	Presen 4° HN	C 103	2	1 L 250 ml	Ambe Pla	r Glass astic	4
Ana PA Total	PRESERV Ilysis AHs Metals		Method See lab Spe See lab Spe	9C	Presen 4° HN	C 103	2	1 L 250 ml	Ambe Pla	r Glass astic	4
Ana PA Total	PRESERV Ilysis AHs Metals		Method See lab Spe See lab Spe	9C	Presen 4° HN	C 103	2	1 L 250 ml	Ambe Pla	r Glass astic	4
Ana PA Total	PRESERV Ilysis AHs Metals		Method See lab Spe See lab Spe	9C	Presen 4° HN	C 103	2	1 L 250 ml	Ambe Pla	r Glass astic	4
Ana PA Total	PRESERV Ilysis AHs Metals		Method See lab Spe See lab Spe	9C	Presen 4° HN	C 103	2	1 L 250 ml	Ambe Pla	r Glass astic	4



### FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page 1 of Z

					·			Page ' of	<u> </u>	
Project Site N	troit			Sample ID No.: DA-MWOZR-0314						
Project No.:		112G0243	5	_		Sample Location: Detroit Atwater				
Sampled By:	M.	MENG		-		Duplicate: ——				
Field Analyst:		ROSAHA		-		Blank:			<del></del> .	
	hecked as per (			- tials):					-	
	a de foi en el forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la forma de la for					.10000-1605				
Date: 3-1	<b>8</b> -i4	Color	рН	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)	
	250	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	PP+ (%)-	(+/- mv)	
Method: PERIS		CIEAR	6.94	0648	5.76	0.7	4.55	0.3	193	
SAMPLE COLLEC	TION/ANALYSIS I	NFORMATIO	N:			Madell (1.764)				
ORP (Eh) (+/-	mv)			Make & Mod			73/3			
			Reference	Electrode (c	ircle one): S	Silver-Silver Chlorid	e / Calomel .	Hydrogen P	atinum	
Dissolved Ox							ميد و			
Equipment: Chemi	etrics Test Kit					Concentration:	1.5	_ppm		
Range Used:	Range	Method	Concentra	tion ppm						
	0 to 1 ppm	K-7501				Analysis Time:	1440	_		
	1 to 12 ppm	K-7512	1.4	5						
Notes:	<del></del>									
Alkalinity:						Concentration:	250			
Equipment: Cheme	etrics Test Kit					Concentration:	23	_ ppm		
Range Used:	Range	Method	Concentra	tion ppm						
	10 to 100 ppm	K-9810		''		Analysis Time:	1450			
•	50 to 500 ppm	K-9815	25	0		•		-		
	100 to 1000 ppm	K-9820								
Notes:								Filtere	d:	
Carbon Dioxid	de:									
Equipment: Chem	etrics Test Kit					Concentration:	15	_ppm	•	
	<u> </u>		1	-	i		ت سرور	•		
Range Used:	Range	Method	Concentra			Analysis Time:	1450	-		
	10 to 100 ppm	K-1910	<del>                                     </del>	3						
	100 to 1000 ppm	K-1920	<del> </del>							
Notes:	250 to 2500 ppm	K-1925	<u>.l.</u>							
Ferrous Iron (	(Fo ²⁺ )·									
	•	Calar Mihaal	Banga, A	10 ma/l		Concentration:	<u>ن</u>	ppm		
Equipment	HACH IR-18C (	Joior vy neei	Range: 0	· to mg/L		Concentration.		- ppiii		
						Analysis Time:	1422			
Natas						Allerysis Time.	172	- Filtere	d·	
Notes: Suffide (S ² ):	<del></del>				<del> </del>			1 11/4/ 6	<del></del>	
Equipment Chem	otron Tort Vit					Concentration:	0	ppm		
couloment Cnem					_	Concentration:		- hhiii		
	· ·	Market	Can	**						
Range Used:	Range	Method	Concentra			<u></u>	114	- 3		
	· ·	Method K-9510 K-9510	Concentra			Analysis Time:	144	3		



### FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page Z of Z

Project Site Name:	USCG Detroit	Sample ID No.: DA - MWOZR - G 3/4
Project No.:	112G02435	Sample Location: DETRUIT Atwater
Sampled By: M.	MEGEL	Duplicate:
Field Analyst: T	ROJAHN	Blank:
Field Form Checked as	per QA/QC Checklist (initials):	
Sulfate (SO ₄ ² ):		
Equipment: HACH DR/89	0 Range: 2-70 mg/L	Concentration: 68 ppm
Program/Module: 92		Analysis Time: 1435
Notes:		Filtered:
QA/QC Checklist:		
All data fields have been com	pleted as necessary:	
Correct measurement units a	re cited in the SAMPLING DATA block	:
Values cited in the SAMPLIN	IG DATA block are consistent with the	Groundwater Sample Log Sheet:
Final calulated concentration	is within the appropriate Range Used !	plock:
Title block on each page of fo	orm is initialized by person who performe	od this QA/QC Checklist:

#### **GROUNDWATER SAMPLE LOG SHEET**

TŁ	Tetra Tech	Inc.
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Quarterly GW Monitoring

Project Site Name: Detroit - Atwater

Project No.:

112G02435

	· · · · · · · · · · · · · · · · · · ·										
Sample I	D:	DA-MW04	-0314	_, _		Sampled	By:	nark M	ENWEL		
QA/QC Duplicate ID:						Sample D		03/18/14			
	Collected:	(YES)	NO			Sample 1		1415			
	district to the second		3 * * * *	· · · · · · · · · · · · · · · · · · ·							
	MW04					Purge Da		03/18/14		1000	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
		2"					iter Level (f		2.02		
	creen (ft-BT		3'				tor Reading				
	of Screen (ft		13			Purge Me		Peristaltic			
	II Depth (ft-l		13'			Sample M		Peristaltic		<u>-</u>	
			S WATE TO							117714 118	· Marie
	uality Instru		:21BA	2/4		Pump Co			24824		all and before
Turbidity								<u>_</u>			
			With the left			CHAPTER TO	<b>海</b>				
Time	H ² 0 Level	Flow	Color	рН	s.c.	DO	Turbidity	Temp.	ORP	Salinity	Other
(Hrs)	(ft-BTOR)	mL/min.		(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)	
1320	3.27	200	cluser	6.73	0.545	6.00	224	817	69	01	
1330	3.34	200	CICAR	6.79	0.544	5,52	61	733	123	0.2	
1340	3.48	200	CKAR	6.76	0.551	5.60	13.7	6.57	135	0.2	
1350	3.47	200	CKAR	6.73	6.547	5.62	5.1	6.33	150	c'. 2	
1400	3.57	200	CLCAR	6.73	0.547	5.70	7.2	4.24	155	0.2	
1410	3.62	200	CICAR	6.71	0.545	5.40	7.6	6.39	158	0:2	
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			<u> </u>		1	·				<del>                                     </del>	
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	<u> </u>	<u> </u>			†	<del></del>					· · ·
	<del> </del>	<del></del>	<del> </del>		<del>                                     </del>	<u> </u>	· · ·				
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Start	End	Total	Total Vol.	pН	s.c.	DO	Turbidity	Temp.	ORP	Salinity	Other
Purge	Purge	(min.)	(gal. 🕡	(S.U.)	(mS/cm)	(mg/L)	(NTU)	(C°)	(mV)	(% or ppt)	
1320	1410	50	10	4.71	0.545	5.60	7.6	6.39	158	0.2	l
<b>ANALYSIS</b>	PRESERV	ATTON AND	BOTTLE	EQUIRME	NTS		<b>製造器 - 長来</b> 。	1 TE		<b>新疆</b>	
Ana	alysis		Method		Preser	vative	Number	Vol.	Bottle '	Туре	Collected
P/	AHs		See lab Spe	ec '	4	C	42	1 L	Ambe	r Glass	سن
Total	Metals		See lab Spe	ec	H	103	1	250 ml	Pla	astic	4
Dissolve	ed Metals		See lab Spe	ec .	H	1Ö3	1	250 ml	Pla	astic	4
	. <u></u>										
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OBSERVA	TIONS / NO	TES: (All and a second				West Property			<b>建</b>		
habat had all the	Market Control	THE CALL OF	C.O. S. WINDERSON, N. 1967.	Complete and the property of the same of	RECONCIONAL MATERIAL STREET	Marie Sept.	Lasting West Strategic Williams	ALTERNATION OF SHARK MARKET	HAN LES CONTRACTOR STATE	T. SENERAL TOP.	2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
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# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page I of 2

<del></del>									
Project Site N	Name:	USCG De	tr <u>oit</u>			Sample ID No			
Project No.:		112G0243				Sample Loca	tion: DE+	Roit - Atw	ATER
Sampled By:	M. MEN	GEL	·			Duplicate:			
Field Analyst	T. Ros	AHN		-		Blank:			
Field Form C	hecked as per (	AVQC Che	cklist (init	ials):					
SAMPLING DATA				grijilijija. Ti					
Date: 3-18-	14	Ćolar	рН	s.c.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 141	5	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	PP+_ <del>(%)</del>	(+/- mv)
Method: PERIS		CIEAR	671	0.545	639	7.6	5.60	0.2	158
	CTION/ANALYSIS I	NECHMATIO	N:			ë Allika elikaji			
ORP (Eh) (+/-	mv)				el:_ <i>Hor</i>		13		
			Reference	Electrode (d	circle one); S	ilver-Silver Chloric	le / Calomel /	Hydrogen / P	latinum ]
Dissolved Ox	ygen:		-				1		
Equipment: Chem	etrics Test Kit				_	Concentration:		_ppm	
Range Used:	Range	Method	Concentrat	ion ppm				٠	
T(TA)	0 to 1 ppm	K-7501	+1		}	Analysis Time:	1645	_	'
V	1 to 12 ppm	K-7512	2		]	·			
Notes: Alkalinity:		<u>.</u>							
Equipment Chem	etrics Test Kit					Concentration:	190	_ppm	
Range Used:	Range	Method	Concentrat	ion ppm	}		_		t j
	10 to 100 ppm	K-9810			}	Analysis Time:	1704	_	
	50 to 500 ppm	K-9815		10					
	100 to 1000 ppm	K-9820	19	0	<u> </u>		•		
Notes:	·							Filtered	<b>d</b> :
Carbon Dioxi Equipment: Chem			-			Concentration:	<del>-</del>	·	
Range Used:	Range	Method	Concentrat	tion ppm		Analysis Time:	1707	, _	
ン	10 to 100 ppm	K-1910	13	3	]				
	100 to 1000 ppm	K-1920				•			
·	250 to 2500 ppm	K-1925_			] .				
Notes:									,
Ferrous Iron	(Fe²+):				*				
Équipment:	HACH IR-18C C	Color Wheel	Range: 0 -	10 mg/L		Concentration:	<u> </u>	_ppm	
Notes:						Analysis Time:	1655	- Filtered	<b>1</b> ·
		<u> </u>					<u></u>	, 1105/04	
Sulfide (S ² ):							C:		
Equipment: Chem	etrics Test Kit	т	<del></del>		1	Concentration:		_ppm	
Range Used:	Range	Method	Concentrat	ion ppm				<b>1</b>	
	0 to 1 ppm.	K-9510	0		!	Analysis Time:	1650	•	
<u> </u>	1 to 10 ppm	K-9510	<u> </u>		]				
Notes:									



# FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Page Z of Z

Project Site Name:	USCG Detroit	Sample ID No.: 104 - MW04 - 03 14
Project No.:	112G02435	Sample Location: DETROIT Atwater
Sampled By: M. ME	IGEL	Duplicate: ——
Field Analyst: T. Ro	JAHA	Blank:
Field Form Checked as	per QA/QC Checklist (initials):	TR .
Sulfate (SO ₄ 2):		
Equipment HACH DR/89	0 Range: 2-70 mg/L	Concentration: Z4 ppm
Program/Module: 92		
		Analysis Time:
Notes:		Filtered:
QA/QC Checklist:	-	
All data fields have been com	pleted as necessary:	
Correct measurement units a	re cited in the SAMPLING DATA block	•
Values cited in the SAMPLIN	G DATA block are consistent with the 0	Groundwater Sample Log Sheet:
Final calulated concentration	is within the appropriate Range Used t	block:
Title block on each page of fo	rm is initialized by person who performe	ed this QA/QC Checklist:

CREW-M.MENSE! 112602435 03/18/14 USCG DETROIT ATWATER 0600 HRS - LEFT HOME to pick up M. MENGEl 0630 HRS - ARRIVE @ M. MENGEL'S HOME MOB RENTAL Eq. into SUV RENTAL 0653 HAS - PURCHUSE Ziplock baps @Walnort 1105 Has. PICK UP KEY @ CG BASE FOR Detacit Atwater gate 1115 HRS - ARRIVE @ Site - UNlock gate MM - RETURN the Key TR - StayEd @ SitE to OPEN WELLS 1135 HAS - MM RETURNED to Sits PREP to SAMPLE GROUNDWATER DID CAlibration check on Horibas - WENdon calibrated SAME ON 3/14/14 WATER LEVES (WL) WELL ID W.L. Times MWOIR 1.50 2.05 MWOZR 1200 MW 04 3.27 1320 SG@ SLIP 5,42 1325

Tologal 3/14

WEATHER: Mostly Sunny High 300s TUES 3-18-14 Con't SAMPLE ID Purga Punga COMMENTS TIME DA-MWOIR-0314 1205 1255 1300 DUP FROM DA-FD 031814 0000 Above Well (MW) DA-MWOZR-0314 1200 1250 1250 (MS/mso) DA-MW04-0314 1320 1410 TR DID MNA FUR ABOUE SAMPLED WILL TAMMINGA ARRIVED ~1400 HRS -@ SITE to OBSERVE SOIL SAMPling We hadn't layed out the SAMPling locations yet & WERE Still SAMPling the WElls E RUNNING MINA - No left the site but said he would

1500 Has - Layed out sample locations 1500 Has - Layed out sample locations 1=02 50il sampling Composites

RETURN to OBSCIVE SOIL

SAMPLE LOCATIONS	SAMPLE ID	Sample Time
A,B,C,D & E	DA-58001-0006	1530
A.B.C.DEE	DA-58001-1224	1550
FGHIEJ	DA-58002-0006	1600
F, GH, IEJ	DA-58002-1224	1630

Testigal 3/18/14

20	21
~1600Has - W. TAMMINGA RETURNED	
to observe suil sampling	
É took A FEW PHOTOS	· · · · · · · · · · · · · · · · · · ·
1730 HRS - FINISH CLEANUP @ SITE	
É LEAVE FOR HOME	
1739 HAS - PUNCHASE ICE C	
SHELL STA.	· · · · · · · · · · · · · · · · · · ·
1726 Has - DINNER	
1755 HRS - BACK ON Rd. to Home	
2200 HRS - ARRIVE @ M. MENGELS Hand	
DEMOS VENDOR EQ. INTO	
MM'S TRUCK	
12:15 Has - GAS UP SUV AFTER	
LEAVING MM'S RESIDENCE	
22:40 Has - ARRIVE HOME demob SUV RENTAL	
23:04 HAS - RETURN SUV RENTAL.	
23:25HRS - RETURN Homb	
END -	
2,7.2	· · · · · · · · · · · · · · · · · · ·
	•
The Soil	

ATTACHMENT B DISPOSAL MANIFEST Workorder 21-00 1789000

Invoice: 69117

Trip# 23764

Pk	ase pr	rint or type. (Form designed for use on elite (12-pitch) typewriter.)					Form	Approved. O	MB No. 2	2050-0039
	W	FORM HAZARDOUS 1. Generator ID Number MISTE MANIFEST MIS 680 308 471	2. Page 1 of 1	3 Emergency Re (313) 34	пропы Роспе 7-1300		Tracking No.	5256	J	JK
7	5. Ge	endrator's Name and Mailing Address USCG SECTOR DETROTT  OI EARTH SMART ENV.		Generator's Site A	STATES C	an mading addin	ess)			
Ш	52	5 E. MICHIGAN AVE. #124			ST ATWATE					
Ш		LINE, MI 48176	1		F MI ASSOC					
- } }		endor's Phone: (313) 568-9551	<u>_</u>			U.S. EPA ID	Number			
	EQ	NOUSTRIAL SERVICES					000 263	871		
П	7. Tra	risporter 2 Company Name				U.S. EPA ID	Number			
П						1				
Ш	8. De	signated Facility Name and Site Address EQ DETROIT, INC.				U.S. EPA ID				
П		23 FREDERICK				MID	280 981	566		
Ш		TTROIT, MI 48211 Bys Phone: (313) 347-1300				1				
Н	9a.	8b. U.S. DOT Description (including Proper Shipping Name, Hazard Class. ID Number,		10	Containers	11. Total	12. Unit			
Ш	HM	pand Packing Group (if any))		No.	<del></del>	Quantity	Wt.Vol.	13. VKa	ste Codes	;
I =		Non Hazardoùs Liquid Waste, Not Dot Not RCRA Regulated		001	DM	00400	P	0291		
A							1 1	,		
GENERATOR	├—	[2]		-			<del>}</del>			
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11	1	<u> </u>				ł	1 1			
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П		pecial Handling Instructions and Additional Information					<del></del>			
11	Π. F7	107,164DET / Non Haz IDW Liquids								
	·	1777								- 1
	ļ.,	GENERATOR S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this of		n fully and annual	habe deposits of observe	. b. 2		and nin alocals	id naide	
7 }	,	masked and labeled/placarded, and ere in all respects in proper condition for transport accou	rding to applica	able international a	nd national governm					
		Explorter, I certify that this contents of this consignment conform to the terms of the strached I cartify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large				nerator) is true.				
П	Gener	ratch Diferon's Printed/Typed Name	Sign	aturo ////	<u></u>			Month	Day	Year
I	<u> </u>	Hathony Grazians	L	1/1/L	<u></u>			04	L ²³	14
Ę	16. int	terretional Shipments I Import to U.S.	Export from U.	S. Por	t of entry/exit					
_		porter signature (for exports only):		Date:	e leeving U.S.:	<u> </u>				
ANSPORTER	Transc	ansiporter Actnowledgment of Receipt of Materials porter 1 Pointed/Typed Name	Signa	dure	<del></del>			Month	Day	Year
ğ		Aaron WOCK	4		a	2		04	23	114
28	Transp	porter 2 Printed/Typed Name	Signa					Month	Day	Year
E		·	1_						<u> </u>	
†	18. Di	scripsncy								
$\ $	18a. D	Discrepancy Indication Space Quantity Type		Residue		Partial Rej	ection .		Full Rejec	sion [
		ı								
-	19b. A	Markata Facility (or Generator)		Manifest Refe	erence Number:	U.S. EPA ID I	Number			
녉										
Ā	Facility	y's Phone:				1	_		_	
旧	18c. Si	ignature of Alternate Facility (or Generator)						Month	Day	Year
DESIGNATED FACILITY									<u> </u>	L
18		zarfous Waste Report Management Method Codes (i.e., codes for hazardous waste treatm	ent, disposet, a	and recycling syste	нтв)				_	
ā	1. 1	L'W   ²	]3.			4.				
$\  \cdot \ $	20. D=	signated Facility Owner or Operator, Contribution of receipt of hazardous materials covered	by the manifes	d extremi as materi	in them 18a					$\dashv$
Ш		Typed Name	Signa		-1-20-1 1948			Month	Day	Year
		·								
Į.								1	•	



This certificate is to verify that the wastes specified on the following manifest numbers have been properly managed in accordance with all local, state and federal regulations.

Facility: EQ Detroit, Inc. 1923 Frederick Detroit, MI 48211

Manifest: 012055256JJK

**UNITED STATES COAST GUARD** 

MI2 690 308 471

Inbound Manifest Inbound Container Page Line Weight 993777-1-1 1 1 .00	Approval	Destination		Treatment	Mgmt Code	Outbound Manifest Page Line	Ship/ Disposal Date
		Process - 702	•	NLiq-Solidify-Sub D	LIW	•	4/25/2014

I certify that the above information is true and correct to the best of my knowledge.

**Authorized Signature:** 



ATTACHMENT C LABORATORY REPORTS



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-0314

Lab Sample ID:

1403255-01

Matrix:

Water ug/L

Unit: Dilution Factor:

1

QC Batch:

1402350

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 13:00

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

Prepared: Analyzed:

Analytical Batch:

3/21/14 7:49

ALK JLB

3/25/14 12:11 4C25012

#### Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL	MDL
83-32-9	Acenaphthene	0. <b>5</b> 0U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205 <del>-99-</del> 2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-2 <del>4-</del> 2	Benzo(g,h,i)perylene	, 0.50U	0.50	0.061
218-01 <del>-9</del>	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
20 <del>6-44-</del> 0	Ruoranthene	0.50U	0.50	0.063
8 <del>6-</del> 73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50U	0.50	0.015
91-20-3	Naphthalene .	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	. 72	40-110
2-Fluorobiphenyl	<i>75</i>	50-110
o-Terphenyl	<i>78</i>	<i>50-135</i>



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID: Lab Sample ID: DA-MW01R-0314

Matrix:

1403255-01

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 13:00

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	2.0		1.0	0.18	ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371
Barium	230		5.0	0.68	ug/L	5	USEPA-6020A	03/27/14 15:45	DSC	1402371
Cadmium	0.20	u	0.20	0.038	ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371
Chromium	0.30	J	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371
Copper	0.74	3	1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 17:58	ασ	1402527
Seienlum	0.60	3	1.0	0.31	. ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371
Zinc	1.7	J	10	1.5	ug/L	1	USEPA-6020A	03/27/14 14:36	DSC	1402371



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW01R-0314

Lab Sample ID: Matrix: 1403255-01

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 13:00

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	2.6		1.0	0.18	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370
Barium	230		5.0	0.68	ug/L	5	USEPA-6020A	03/27/14 15:26	DSC	1402370
Cadmium	0.043	3	0.20	0.038	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370
Chromium	0.33	3	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370
Copper	1.1		1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370
Lead	0.23	J	1.0	0.15	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 16:53	αΦ	1402524
Selenium	0.92	J	1.0	0.31	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370
Silver	0.20	u	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370
Zinc	4.4	3	10	1.5	ug/L	1	USEPA-6020A	03/27/14 13:51	DSC	1402370



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-0314

Lab Sample ID:

1403255-02

Matrix:

Water

1402350

Unit: Dilution Factor:

ug/L 1

QC Batch:

Description: Sampled:

1403255

**Laboratory Services** 3/18/14 12:50

Sampled By:

Work Order:

Tetra Tech

Received: Prepared: 3/20/14 8:50

3/21/14 7:49

ALK

Analyzed:

3/25/14 12:44

JLB

Analytical Batch: 4C25012

#### Semivolatile Organic Compounds by EPA Method 8270C

CAS Number	Analyte	Analytical Result	RL .	MDL
83-32 <del>-9</del>	Acenaphthene	0.50U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205-99-2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08-9	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-24-2	Benzo(g,h,i)perylene	<b>0.50U</b>	0.50	0.061
218-01-9	Chrysene	0.50U	0.50	0.045
53-70-3	Dibenz(a,h)anthracene	0.50U	0.50	0.11
206-44-0	Fluoranthene	0.50U	0.50	0.063
86-73-7	Fluorene	0.50U	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0. <del>5</del> 0U	0.50	0.080
91-57 <b>-6</b>	2-Methylnaphthalene	0. <del>5</del> 0U	0.50	0.015
91-20-3	Naphthalene .	0.50U	0.50	0.031
85-01-8	Phenanthrene	0.50U	0.50	0.043
129-00-0	Pyrene	0.50U	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>7</i> 2	40-110
2-Fluorobiphenyl	72	50-110
o-Terphenyl	<i>75</i>	<i>50-135</i>



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-0314

Lab Sample ID: Matrix: 1403255-02

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 12:50

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	0.44	J	1.0	0.18	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Barlum	42		1.0	0.14	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Cadmium	0.073	J	0.20	0.038	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Chromium	0.97	J	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Copper	1.2		1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 18:03	αΦ	1402527
Selenium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371
Zinc ·	6.4	3	10	1.5	ug/L	1	USEPA-6020A	03/27/14 14:40	DSC	1402371



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW02R-0314

Lab Sample ID: Matrix: 1403255-02

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 12:50

Sampled By: Received: Tetra Tech 3/20/14 8:50

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	0.49	J	1.0	0.18	ug/L	1	USEPA-6020A	03/27/14 13:55	DSC	1402370
Barlum	42		1.0	0.14	ug/L	1 .	USEPA-6020A	03/27/14 13:55	DSC	1402370
Cadmium	0.10	3	0.20	0.038	ug/L	1	USEPA-6020A	03/27/14 13:55	DSC	1402370
Chromlum	0.94	.3	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 13:55	DSC	1402370
Copper	1.1		1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 13:55	DSC	1402370
Lead	1.0	U	1.0	0.15	ug/L	• 1	USEPA-6020A	03/27/14 13:55	DSC	1402370
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 16:59	αΦ	1402524
Selenium	0.86	3	1.0	0.31	ug/L	1	USEPA-6020A	03/27/14 13:55	DSC	1402370
Silver	0.20	υ	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 13:55	DSC	1402370
Zinc	2.0	J	10	1.5	ug/L	1	USEPA-6020A	03/27/14 13:55	DSC	1402370



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-0314

Lab Sample ID:

1403255-03

Matrix:

Water

Unit:

ug/L Dilution Factor: 1

QC Batch:

1402350

Work Order:

1403255

Description:

**Laboratory Services** 

Sampled:

3/18/14 14:15

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

Prepared: Analyzed: 3/21/14 7:49 3/25/14 13:17 ALK

JLB By:

Analytical Batch:

4C25012

#### Semivolatile Organic Compounds by EPA Method 8270C

	Analytical	•	
Analyte	Result	RL	MDL
Acenaphthene	0.50U	0.50	0.033
Acenaphthylene	0.50U	0.50	0.017
Anthracene	0.50U	0.50	0.062
Benzo(a)anthracene	0.50U	0.50	0.045
Benzo(a)pyrene	0.50U	0.50	0.040
Benzo(b)fluoranthene	0.50U	0.50	0.058
Benzo(k)fluoranthene	0.50U	0.50	0.060
Benzo(g,h,l)perylene	0.50U	0.50	0.061
Chrysene	0.50U	0.50	0.045
Dibenz(a,h)anthracene	0.50U	0.50	0.11
Fluoranthene	0.50U	0.50	0.063
Fluorene	0.50U	0.50	0.041
Indeno(1,2,3-cd)pyrene	0.50U	0.50	0.080
2-Methylnaphthalene	0.50U	0.50	0.015
Naphthalene	0.50U	0.50	0.031
Phenanthrene	0.50U	0.50	0.043
Pyrene	0.50U	0.50	0.066
	Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(g,h,l)perylene Chrysene Dibenz(a,h)anthracene Fluoranthene Fluoranthene Indeno(1,2,3-cd)pyrene 2-Methylnaphthalene Naphthalene Phenanthrene	Analyte         Result           Acenaphthene         0.50U           Acenaphthylene         0.50U           Anthracene         0.50U           Benzo(a)anthracene         0.50U           Benzo(b)fluoranthene         0.50U           Benzo(b)fluoranthene         0.50U           Benzo(k)fluoranthene         0.50U           Benzo(g,h,l)perylene         0.50U           Chrysene         0.50U           Dibenz(a,h)anthracene         0.50U           Fluoranthene         0.50U           Fluorene         0.50U           Indeno(1,2,3-cd)pyrene         0.50U           2-Methylnaphthalene         0.50U           Naphthalene         0.50U           Phenanthrene         0.50U	Analyte         Result         RL           Acenaphthene         0.50U         0.50           Acenaphthylene         0.50U         0.50           Anthracene         0.50U         0.50           Benzo(a)anthracene         0.50U         0.50           Benzo(b)fluoranthene         0.50U         0.50           Benzo(b)fluoranthene         0.50U         0.50           Benzo(g,h,l)perylene         0.50U         0.50           Chrysene         0.50U         0.50           Dibenz(a,h)anthracene         0.50U         0.50           Fluoranthene         0.50U         0.50           Fluorene         0.50U         0.50           Indeno(1,2,3-cd)pyrene         0.50U         0.50           2-Methylnaphthalene         0.50U         0.50           Naphthalene         0.50U         0.50           Phenanthrene         0.50U         0.50

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	<i>7</i> 0	40-110
2-Fluorobiphenyl	<i>73</i>	50-110
o-Terphenyl	<i>78</i>	<i>50-135</i>



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-MW04-0314 1403255-03

Lab Sample ID: Matrix:

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 14:15

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	0.56	J	1.0	0.18	ug/L	1	USEPA-6020A	03/27/14 14:44	DSC	1402371
Barlum	99		5.0	0.68	ug/L	5	USEPA-6020A	03/27/14 15:48	DSC	1402371
Cadmium	0.27		0.20	0.038	ug/L	1	USEPA-6020A	03/27/14 14:44	DSC	1402371
Chromium	0.43	J	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 14:44	DSC	1402371
Copper	3.4		1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 14:44	DSC	1402371
Lead	1.4		1.0	0.15	ug/L	1	USEPA-6020A	03/27/14 14:44	DSC	1402371
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 18:09	ŒΟ	1402527
Selenium	. 10		1.0	0.31	ug/L	1	USEPA-6020A	03/27/14 14:44	DSC	1402371
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 14:44	DSC	1402371
*Zinc	99		50	7.5	ug/L	5	USEPA-6020A	03/27/14 15:48	DSC	1402371



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID: Lab Sample ID: DA-MW04-0314

Matrix:

1403255-03

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 14:15

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	0.76	,	1.0	0.18	ug/L	1	USEPA-6020A	03/27/14 13:59	DSC	1402370
Barium	99		5.0	0.68	ug/L	5	USEPA-6020A	03/27/14 15:28	DSC	1402370
Cadmium	0.29		0.20	0.038	ug/L	1 ,	USEPA-6020A	03/27/14 13:59	DSC	1402370
Chromlum	0.42	3	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 13:59	DSC	1402370
Copper	3.8		1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 13:59	DSC	1402370
Lead	3.5		1.0	0.15	ug/L	1	USEPA-6020A	03/27/14 13:59	DSC	1402370
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 17:04	С	1402524
Seienium	9.4		1.0	0.31	ug/L	1	USEPA-6020A	03/27/14 13:59	DSC	1402370
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 13:59	DSC	1402370
Zinc	99		50	7.5	ug/L	5	USEPA-6020A	03/27/14 15:28	DSC	1402370



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID: Lab Sample ID:

1403255-04

Matrix:

1402350

Unit:

Water ug/L

Dilution Factor:

1

QC Batch:

DA-FD031814

Sampled:

1403255

Description:

**Laboratory Services** 

Sampled By:

Work Order:

3/18/14 0:00 Tetra Tech

Received:

3/20/14 8:50

Prepared: Analyzed: 3/21/14 7:49 3/25/14 13:50

ALK JLB By:

Analytical Batch:

4C25012

#### Semivolatile Organic Compounds by EPA Method 8270C

		Analytical		
CAS Number	Analyte	Result	RL	MDL
83-32-9	Acenaphthene	0.50U	0.50	0.033
208-96-8	Acenaphthylene	0.50U	0.50	0.017
120-12-7	Anthracene	0.50U	0.50	0.062
56-55-3	Benzo(a)anthracene	0.50U	0.50	0.045
50-32-8	Benzo(a)pyrene	0.50U	0.50	0.040
205 <del>-99-</del> 2	Benzo(b)fluoranthene	0.50U	0.50	0.058
207-08 <del>-9</del>	Benzo(k)fluoranthene	0.50U	0.50	0.060
191-2 <del>4-</del> 2	Benzo(g,h,i)perylene	0.50U	0.50	0.061
218-01-9	Chrysene	0.50∪	0.50	0.045
53-70-3	Dibenz(a,h)anthraœne	0.50U	0.50	0.11
20 <del>6 44 0</del>	Ĥuoranthene	0.50∪	0.50	0.063
86-73-7	Fluorene	0.50บ	0.50	0.041
193-39-5	Indeno(1,2,3-cd)pyrene	0.50บ	0.50	0.080
91-57-6	2-Methylnaphthalene	0.50∪	0.50	0.015
91-20-3	Naphthalene	0.50∪	0.50	0.031
85-01-8	Phenanthreñe	0.50U	0.50	0.043
129-00-0	Pyrene	0.50∪	0.50	0.066

Surrogates:	% Recovery	Control Limits
Nitrobenzene-d5	71	40-110
2-Fluorobiphenyl	<i>77</i>	50-110
o-Terphenyl	77	<i>50-135</i>



Client:

**TETRA TECH NUS - Pittsburgh** 

Project:

**USCG Atwater Facility** 

Client Sample ID:

DA-FD031814

Lab Sample ID:

1403255-04

Matrix:

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 0:00

Sampled By:

Tetra Tech

Received:

3/20/14 8:50

#### Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	2.3		1.0	0.18	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371
Barium	250		5.0	0.68	ug/L	5	USEPA-6020A	03/27/14 16:08	DSC	1402371
Cadmium	0.20	U.	0.20	0.038	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371
Chromium	1.0	u	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371
Copper	0.66	3	1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371
Lead	1.0	U	1.0	0.15	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 18:49	CKD	1402527
Selenium	1.2		1.0	0.31	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371
Zinc	2.5	J	10	1.5	ug/L	1	USEPA-6020A	03/27/14 15:10	DSC	1402371



Client:

TETRA TECH NUS - Pittsburgh

Project:

**USCG Atwater Facility** 

Client Sample ID: Lab Sample ID: DA-FD031814 1403255-04

Matrix:

Water

Work Order:

1403255

Description:

Laboratory Services

Sampled:

3/18/14 0:00 Tetra Tech

Sampled By: Received:

3/20/14 8:50

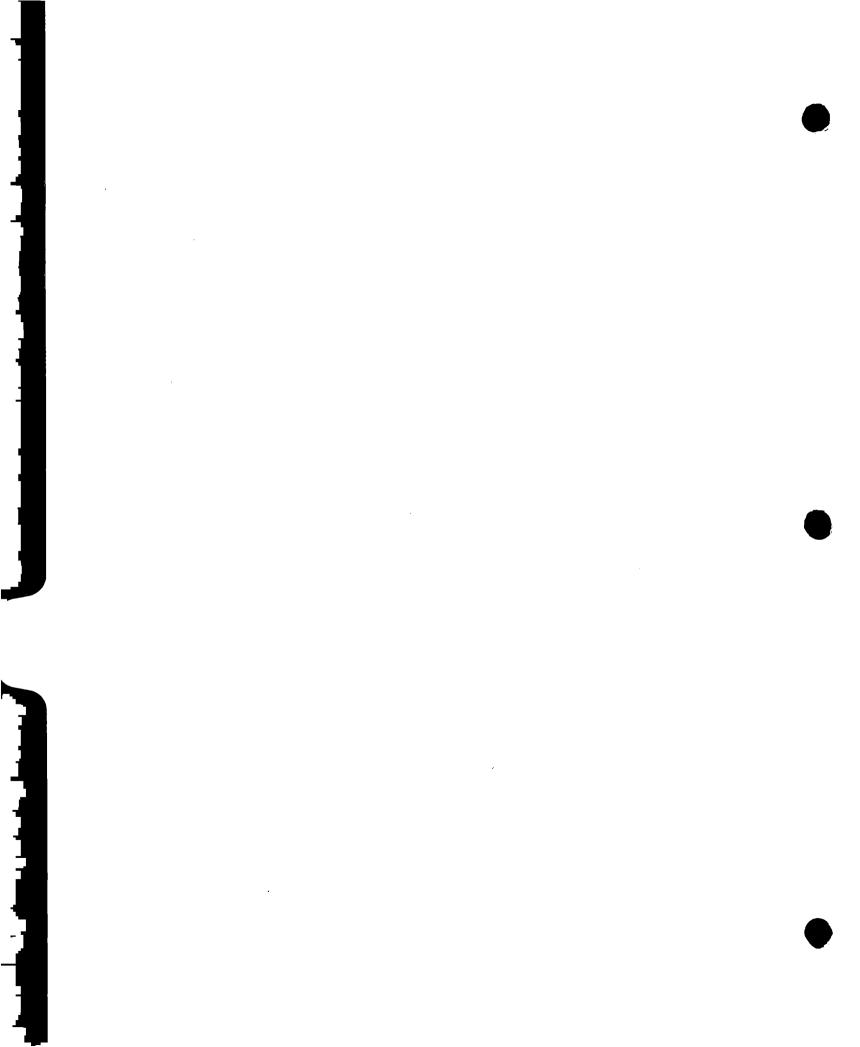
#### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Time Analyzed	Ву	QC Batch
Arsenic	2.7		1.0	0.18	ug/L	1	ÚSEPA-6020A	03/27/14 14:25	DSC	1402370
Barium	230		5.0	0.68	ug/L	5	USEPA-6020A	03/27/14 15:42	DSC	1402370
Cadmium	0.20	U	0.20	0.038	ug/L	1	USEPA-6020A	03/27/14 14:25	DSC	1402370
Chromium	0.30	3	1.0	0.20	ug/L	1	USEPA-6020A	03/27/14 14:25	DSC	1402370
Copper	1.0		1.0	0.13	ug/L	1	USEPA-6020A	03/27/14 14:25	DSC	1402370
Lead	0.23	J	1.0	0.15	ug/L	1	USEPA-6020A	03/27/14 14:25	DSC	1402370
Mercury	0.20	U	0.20	0.055	ug/L	1	USEPA-7470A	04/01/14 17:40	αΦ	1402524
Selenium	1.4		1.0	0.31	ug/L	1	USEPA-6020A	03/27/14 14:25	DSC	1402370
Silver	0.20	U	0.20	0.037	ug/L	1	USEPA-6020A	03/27/14 14:25	DSC	1402370
Zinc	3.4	3	10	1.5	ug/L	1	USEPA-6020A	03/27/14 14:25	DSC	1402370

ATTACHMENT D
DATA VALIDATION REPORT
(on pdf)

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### Appendix H

Fill Sample Report (City of Detroit)



PITT-05-14-004

May 2, 2014

Mr. Will Tamminga
Director - Project Management
Detroit Economic Growth Corporation
500 Griswold Street, Suite 2200
Detroit, Michigan 48226

Subject:

**Backfill Sampling Results from USCG Atwater Site** 

Dear Mr. Tamminga:

On March 18, 2014, Tetra Tech, Inc. (Tetra Tech) collected backfill samples on behalf of the City of Detroit from the United States Coast Guard (USCG) property on Atwater Street in the City of Detroit. The samples were collected according the City of Detroit's Purchase Order and Scope of Services dated March 17, 2014.

Four (4) composite soil samples were collected with a hand auger and/or hand trowels. Two (2) composite samples (DA-SB001-0006 and DA-SB002-0006) were collected from the top soil (approximately 0 to 6 inches below ground surface), and two (2) other composite samples (DA-SB001-1224 and DA-SB002-1224) were collected from the fill (approximately 1 to 2 feet below ground surface). Each composite sample was composited from five (5) subsamples. The approximate sample locations are shown on the attached sketch from the Scope of Services. Copies of the field sampling forms are attached. The samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), Michigan-10 metals, and polychlorinated biphenyls (PCBs) by Trimatrix Laboratories of Grand Rapids, Michigan. The samples were collected and shipped to the laboratory within less than a 24-hour period.

Following receipt of the data from the laboratory, the data was validated by Tetra Tech. The data was determined to be acceptable except for the results for 3,3'-dichlorobenzidine which were rejected because of poor blank spike recovery. However, this compound is not commonly used and is rarely detected in environmental samples. A copy of the laboratory data and the validation report are included on a CD with this report.

The laboratory results were tabulated and compared to the State of Michigan Department of Environmental Quality (MDEQ) Residential Cleanup Criteria - Direct Contact Criteria (December 30, 2013 edition). This table also includes the results of the fill (DASB-CF-01, DASB-CF-02, and DASB-CF-03) and topsoil (DASB-CF-04) samples collected by the USCG when the excavation was backfilled. The results and criteria are summarized on Table 1 (attached). All results (except as noted above) were less than the MDEQ Residential Direct Contact Criteria.

A pdf of this report is also included with this letter.



PITT-05-14-004

Mr. Will Tamminga Director - Project Management **Detroit Economic Growth Corporation** May 2, 2014 - Page Two

Should you have any questions regarding the enclosed information, please contact Joseph Logan at 412-921-7231.

Very truly yours,

Joseph W. Logan, Jr. Project Manager

JWL/stc

**Enclosure** 

cc:

File: 112C06605

James Cook, USCG (1 copy)

TABLE

TABLE 1

ANALYTICAL RESULTS OF POST-EXCAVATION FILL SAMPLES FROM USCG ATWATER FACILITY

DETROIT, MICHIGAN

PAGE 1 OF 4

SAMPLE ID SAMPLE DATE	MDEQ Residential Direct	DA-SB001-0006 20140318 TOPSOIL	DA-SB001-1224 20140318 FILL	DA-SB002-0006 20140318 TOPSOIL	DA-SB002-1224 20140318	DASB-CF-01 20130417	DASB-CF-02 20130417	DASB-CF-03 20130419 FILL	DASB-CF-04 20130423
SOIL TYPE		TOPSUIL	FILL	TOPSOIL	FILL	FILL	FILL	I .	TOPSOIL
TOP DEPTH, feet below surface	Contact	U 0.5	1	0.5	1	NA NA	NA NA	NA NA	NA NA
BOTTOM DEPTH, feet below surface	Criteria	0.5		0.5	2	NA	NA NA	NA NA	NA NA
METALS (MG/KG)	7.0		0.0	0.7	0.5	0.0			
ARSENIC	7.6	4	3.8	3.7	3.5	3.3	3.6	3.3	3.2
BARIUM	37000	23	8.7	22	9.5	NA	NA	NA	NA
CADMIUM	550	0.18 J	0.13 J	0.19 J	0.13 J	NA NA	NA_	NA .	NA
CHROMIUM	2500	7.6 J	9.1 J	7.7 J	6.4 J	NA	NA	NA	NA
COPPER	20000	5	6	5.6	5.3	NA	NA	NA	NA
LEAD	400	13 J	4 J	9.6 J	4.2 J	3.4	3.6	3.3	12
MERCURY	160	0.022 J	0.0072 J	0.036 J	0.013 J	NA	NA	NA	NA
SELENIUM	2600	0.21	0.12	0.28	0.13	NA	NA	NA	NA
SILVER	2500	0.02 J	0.05 U	0.018 J	0.05 U	NA	NA	NA	NA
ZINC	170000	29	25	28	23	NA NA	NA	NA	NA
PCBS (MG/KG)							1		
AROCLOR-1016	NC	0.015 U	0.015 U	0.015 U	0.014 U	NA	NA	NA	NA
AROCLOR-1221	NC	0.015 U	0.015 U	0.015 U	0.014 U	NA	NA	NA	NA
AROCLOR-1232	NC	0.015 U	0.015 U	0.015 U	0.014 U	NA	NA	NA	NA
AROCLOR-1242	NC	0.015 U	0.015 U	0.015 U	0.014 U	NA	NA	NA NA	NA
AROCLOR-1248	NC	0.015 U	0.015 U	0.015 U	0.014 U	NA	NA	NA	NA
AROCLOR-1254	NC	0.015 U	0.015 U	0.015 U	0.014 U	NA	NA	NA	NA
AROCLOR-1260	NC	0.015 U	0.015 U	0.015 U	0.014 U	NA	NA	NA	NA
AROCLOR-1260	1	0.0525 U	0.0525 U	0.0525 U	0.049 U	NA	NA	NA	NA
SEMIVOLATILES (MG/KG)									
1,1-BIPHENYL	NC	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA NA	NA	NA
1,3-DINITROBENZENE	NC	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
2,4,5-TRICHLOROPHENOL	23000	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
2.4,6-TRICHLOROPHENOL	710	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA	NA NA	NA	NA NA
2,4-DICHLOROPHENOL	660	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA NA	NA	NA NA
2.4-DIMETHYLPHENOL	11000	0.15 U	0.15 U	0.15 U	0.15 U	NA	NA NA	NA	NA
2,4-DINITROPHENOL	NC	0.19 U	0.19 U	0.19 U	0.18 U	NA NA	NA NA	NA NA	NA NA
2,4-DINITROTOLUENE	48	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA NA	NA NA	NA	NA NA
2.6-DINITROTOLUENE	NC	0.0077 U	0.0076 U	0.0075 U	0.0073 U	NA NA	NA NA	NA NA	NA NA
2-CHLORONAPHTHALENE	56000	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA NA	NA NA
2-CHLOROPHENOL	1400	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA NA	NA NA
2-METHYLNAPHTHALENE	8100	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA NA	0.08 U
2-METHYLPHENOL	11000	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA NA	NA NA	NA NA	NA NA
3-METHYLPHENOL	11000	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA NA	NA NA	NA NA	NA NA
4-METHYLPHENOL	11000	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA NA	NA NA	NA NA	NA NA
2-NITROANILINE	NC NC	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA NA	NA NA	NA NA	NA NA
2-NITROPHENOL	630	0.0096 U	0.0094 U		0.0091 U	NA NA		NA NA	NA NA
3.3'-DICHLOROBENZIDINE	6.6	0.019 U 0.77 UR	0.019 U 0.76 UR	0.019 U			NA NA	NA NA	
3-NITROANILINE	NC			0.75 UR	0.72 UR	NA NA	NA NA		NA NA
4.6-DINITRO-2-METHYLPHENOL		0.038 U	0.038 U	0.037 U	0.036 U	NA NA	NA NA	NA NA	NA NA
	79 NG	0.077 U	0.076 U	0.075 U	0.072 U	NA NA	NA	NA NA	NA NA
4-BROMOPHENYL PHENYL ETHER	NC	0.019 U	0.019 ป	0.019 U	0.018 U	NA	NA NA	NA	NA

TABLE 1

ANALYTICAL RESULTS OF POST-EXCAVATION FILL SAMPLES FROM USCG ATWATER FACILITY

DETROIT, MICHIGAN

PAGE 2 OF 4

				PAGE		<u>-</u>			<u> </u>
SAMPLE ID	MDEQ	DA-SB001-0006	DA-SB001-1224	DA-SB002-0006	DA-SB002-1224	DASB-CF-01	DASB-CF-02	DASB-CF-03	DASB-CF-04
SAMPLE DATE	Residential	20140318	20140318	20140318	20140318	20130417	20130417	20130419	20130423
SOIL TYPE	Direct	TOPSOIL	FILL	TOPSOIL	FILL	FILL	FILL	FILL	TOPSOIL
TOP DEPTH, feet below surface	Contact	0	1	0	1 1	NA	NA NA	NA	NA
BOTTOM DEPTH, feet below surface	Criteria	0.5	2	0.5	2	NA	NA NA	NA	NA NA
SEMIVOLATILES (MG/KG) (Continued)		-							•
4-CHLORO-3-METHYLPHENOL	4500	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA .
4-CHLOROANILINE	NC	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA NA
4-CHLOROPHENYL PHENYL ETHER	NC	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
4-NITROANILINE	NC	0.038 U	0.038 U	0.037 U	0.036 U	NA	NA	NA	NA NA
4-NITROPHENOL	NC	0.19 U	0.19 U	0.19 U	0.18 U	NA	NA NA	NA NA	NA NA
ACENAPHTHENE	41000	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA NA	0.08 U
ACENAPHTHYLENE	1600	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA NA	0.08 U
ACETOPHENONE	47000	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA NA	NA NA
ANTHRACENE	230000	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA NA	0.08 U
ATRAZINE	71	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA NA	NA NA	NA NA	NA
BENZALDEHYDE	NC	0.0098 U	0.0034 U	0.0093 U	0.0031 U	NA NA	NA NA	NA NA	NA NA
BENZO(A)ANTHRACENE	20	0.0077 G	0.0075 J	0.0073 U	0.0073 U	NA NA	NA NA	NA NA	0.067 J
BENZO(A)PYRENE	2	0.039 J	0.0043 J	0.017 J	0.0091 U	NA NA	NA NA	NA NA	0.067 J
BENZO(B)FLUORANTHENE	20	0.063 J	0.0037 J	0.013 J	0.0091 U	NA NA		NA NA	0.07 3
BENZO(G,H,I)PERYLENE	2500	0.063 J	0.0034 J	0.03 J	0.0091 U	NA NA	NA NA	NA NA	<u> </u>
BENZO(K)FLUORANTHENE	200	0.027 J	0.003 J 0.0022 J				NA NA		0.028 J
BIS(2-CHLOROETHOXY)METHANE	NC NC			0.0083 J	0.0091 U	NA NA	NA	NA NA	0.052 J
BIS(2-CHLOROETHYL)ETHER		0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA NA	NA NA
	13	0.019 U	0.019 U	0.019 U	0.018 U	NA NA	NA NA	NA	NA
BIS(2-CHLOROISOPROPYL)ETHER	NC 2000	0.0077 U	0.0076 U	0.0075 U	0.0073 U	NA NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE BUTYL BENZYL PHTHALATE	2800	0.018 J	0.019 U	0.014 J	0.018 U	NA	NA	NA	NA
	36000	0.0072 J	0.019 U	0.0064 J	0.018 U	NA	NA	NA NA	NA
CAPROLACTAM	53000	0.038 U	0.038 U	0.037 U	0.036 U	NA	NA	NA	NA
CARBAZOLE	530	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
CHRYSENE	2000	0.041 J	0.019 U	0.019 J	0.018 U	NA	NA	NA	0.07 J
DIBENZO(A,H)ANTHRACENE	2	0.0084 J	0.0094 U	0.0034 J	0.0091 U	NA	NA	NA	0.08 U
DIBENZOFURAN	NC	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA NA
DIETHYL PHTHALATE	170000	0.0077 U	0.0076 U	0.0075 U	0.0073 U	NA	NA	NA	NA_
DIMETHYL PHTHALATE	1000000	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	27000	0.044 J	0.03 J	0.024 J	0.023 J	NA NA	NA	NA	NA
DI-N-OCTYL PHTHALATE	6900	0.019 UJ	0.019 U	0.019 UJ	0.018 U	NA.	NA	NA	NA
FLUORANTHENE	46000	0.051	0.0075 J	0.022	0.018 U	NA	NA	NA	0.13
FLUORENE	27000	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	0.08 U
HEXACHLOROBENZENE	8.9	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
HEXACHLOROBUTADIENE	100	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA NA
HEXACHLOROCYCLOPENTADIENE	2300	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA	NA	NA	NA
HEXACHLOROETHANE	230	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	20	0.022 J	0.0038 U	0.012 J	0.0036 U	ÑA	NA	NA	0.02 J
ISOPHORONE	4800	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
NAPHTHALENE	16000	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	. NA	0.08 U
NITROBENZENE	100	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	1.2	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA

**TABLE 1** 

## ANALYTICAL RESULTS OF POST-EXCAVATION FILL SAMPLES FROM USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 3 OF 4

SAMPLE ID	MDEQ	DA-SB001-0006	DA-SB001-1224	DA-SB002-0006	DA-SB002-1224	DASB-CF-01	DASB-CF-02	DASB-CF-03	DASB-CF-04
SAMPLE DATE	Residential	20140318	20140318	20140318	20140318	20130417	20130417	20130419	20130423
SOIL TYPE	Direct	TOPSOIL	FILL	TOPSOIL	FILL	FILL	FILL	FILL	TOPSOIL
TOP DEPTH, feet below surface	Contact	0	1	0	1 1	NA	NA	NA	NA
BOTTOM DEPTH, feet below surface	Criteria	0.5	2	0.5	2	NA	NA	NA	NA
SEMIVOLATILES (MG/KG) (Continued)		-							
N-NITROSODIPHENYLAMINE	1700	0.0096 U	0.0094 U	0.0093 U	0.0091 U	NA	NA	NA	NA
PENTACHLOROPHENOL	90	0.038 U	0.038 U	0.037 U	0.036 U	NA	NA	NA	NA
PHENANTHRENE	1600	0.03	0.019 U	0.011 J	0.018 U	NA	NA	NA	0.06 J
PHENOL	40000	0.019 U	0.019 U	0.019 U	0.018 U	NA	NA	NA	NA
PYRENE	29000	0.076 J	0.0071 J	0.033 J	0.018 U	NA	NA	NA	0.13
VOLATILES (MG/KG)	***************************************	Yellow				<b>\$</b>	C. and and and and and and and and and and	;	
1,1,1-TRICHLOROETHANE	500000	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	53	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	180	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
1,1,2-TRICHLOROTRIFLUOROETHANE	1000000	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
1,1-DICHLOROETHANE	27000	0.029 U	0.026 U	0.025 U	0.027 U	NA .	NA	NA	NA
1,1-DICHLOROETHENE	200	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NC	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	990	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	4.4	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
1,2-DIBROMOETHANE	0.092	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
1,2-DICHLOROBENZENE	19000	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
1,2-DICHLOROETHANE	91	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
1,2-DICHLOROPROPANE	140	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
1,3-DICHLOROBENZENE	200	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
1,4-DICHLOROBENZENE	400	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA NA	NA	NA
1,4-DIOXANE	530	1.4 U	1.3 U	1.2 U	1.4 U	NA	NA	NA	NA
2-BUTANONE	120000	0.087 J	0.076 J	0.086 J	0.1 J	NA	NA	NA	NA
2-HEXANONE	32000	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
4-METHYL-2-PENTANONE	56000	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
ACETONE	23000	0.2 U	0.25 U	0.2 U	0.24 U	NA	NA	NA	NA
BENZENE	180	0.029 U	0.026 U_	0.025 U	0.027 U	NA	NA	NA	NA
BROMOCHLOROMETHANE	NC	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
BROMODICHLOROMETHANE	110	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
BROMOFORM	820	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
BROMOMETHANE	320	0.026 J	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
CARBON DISULFIDE	7200	0:057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
CARBON TETRACHLORIDE	96	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
CHLOROBENZENE	4300	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
CHLORODIBROMOMETHANE	110	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
CHLOROETHANE	2600	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
CHLOROFORM	1200	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
CHLOROMETHANE	1600	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA NA
CIS-1,2-DICHLOROETHENE	2500	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA NA
CIS-1,3-DICHLOROPROPENE	10	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA NA	NA	NA
CYCLOHEXANE	NC	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA

TABLE 1

## ANALYTICAL RESULTS OF POST-EXCAVATION FILL SAMPLES FROM USCG ATWATER FACILITY DETROIT, MICHIGAN PAGE 4 OF 4

				PAGE	4 OF 4				
SAMPLE ID	MDEQ	DA-SB001-0006	DA-SB001-1224	DA-SB002-0006	DA-SB002-1224	DASB-CF-01	DASB-CF-02	DASB-CF-03	DASB-CF-04
SAMPLE DATE	Residential	20140318	20140318	20140318	20140318	20130417	20130417	20130419	20130423
SOIL TYPE	Direct	TOPSOIL	FILL	TOPSOIL	FILL	FILL	FILL	FILL	TOPSOIL
TOP DEPTH, feet below surface	Contact	0	1	0	1	NA	NA	NA	NA NA
BOTTOM DEPTH, feet below surface	Criteria	0.5	2	0.5	2	NA	NA	NA	NA NA
VOLATILES (MG/KG) (Continued)									
DICHI ORODIFI UOROMETHANE	52000	0 029 U	0.026 U	0.025 U	0.027 []	NA	NA	NA NA	NA

DAM EL DATE		20170010	20170010	20170010	20170010	20100717	20130717	20130713	20130723
SOIL TYPE	Direct	TOPSOIL	FILL	TOPSOIL	FILL	FILL	FILL	FILL	TOPSOIL
TOP DEPTH, feet below surface	Contact	0	1	0	1	NA	NA	NA	NA
BOTTOM DEPTH, feet below surface	Criteria	0.5	2	0.5	2	NA	NA	NA	NA
VOLATILES (MG/KG) (Continued)							<u> </u>		, , , , , , , , , , , , , , , , , , , ,
DICHLORODIFLUOROMETHANE	52000	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
ETHYLBENZENE	22000	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
ISOPROPYLBENZENE	25000	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
M+P-XYLENES	410000	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
METHYL ACETATE	NC	0.17 J	0.052 UJ	0.18 J	0.058 J	NA	NA	NA	NA
METHYL CYCLOHEXANE	NC	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	1500	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
METHYLENE CHLORIDE	1300	0.18 J	0.25 J	0.22 J	0.22 J	NA NA	NA	NA	NA
O-XYLENE	410000	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
STYRENE	400	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
TETRACHLOROETHENE	200	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA _	NA
TOLUENE	50000	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA NA
TOTAL XYLENES	410000	0.086 U	0.078 U	0.074 U	0.082 U	NA NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	3800	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA _	NA
TRANS-1,3-DICHLOROPROPENE	10	0.029 U	0.026 U	0.025 U	0.027 U	NA NA	NA	NA	NA
TRICHLOROETHENE	110	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	79000	0.057 U	0.052 U	0.049 U	0.054 U	NA	NA	NA	NA
VINYL CHLORIDE	3.8	0.029 U	0.026 U	0.025 U	0.027 U	NA	NA	NA	NA

### Notes:

NA - Not applicable.
NC - No criterion.
U - Not detected at detection limit shown.

J - Estimated.

UJ - Not detected at estimated detection limit shown.

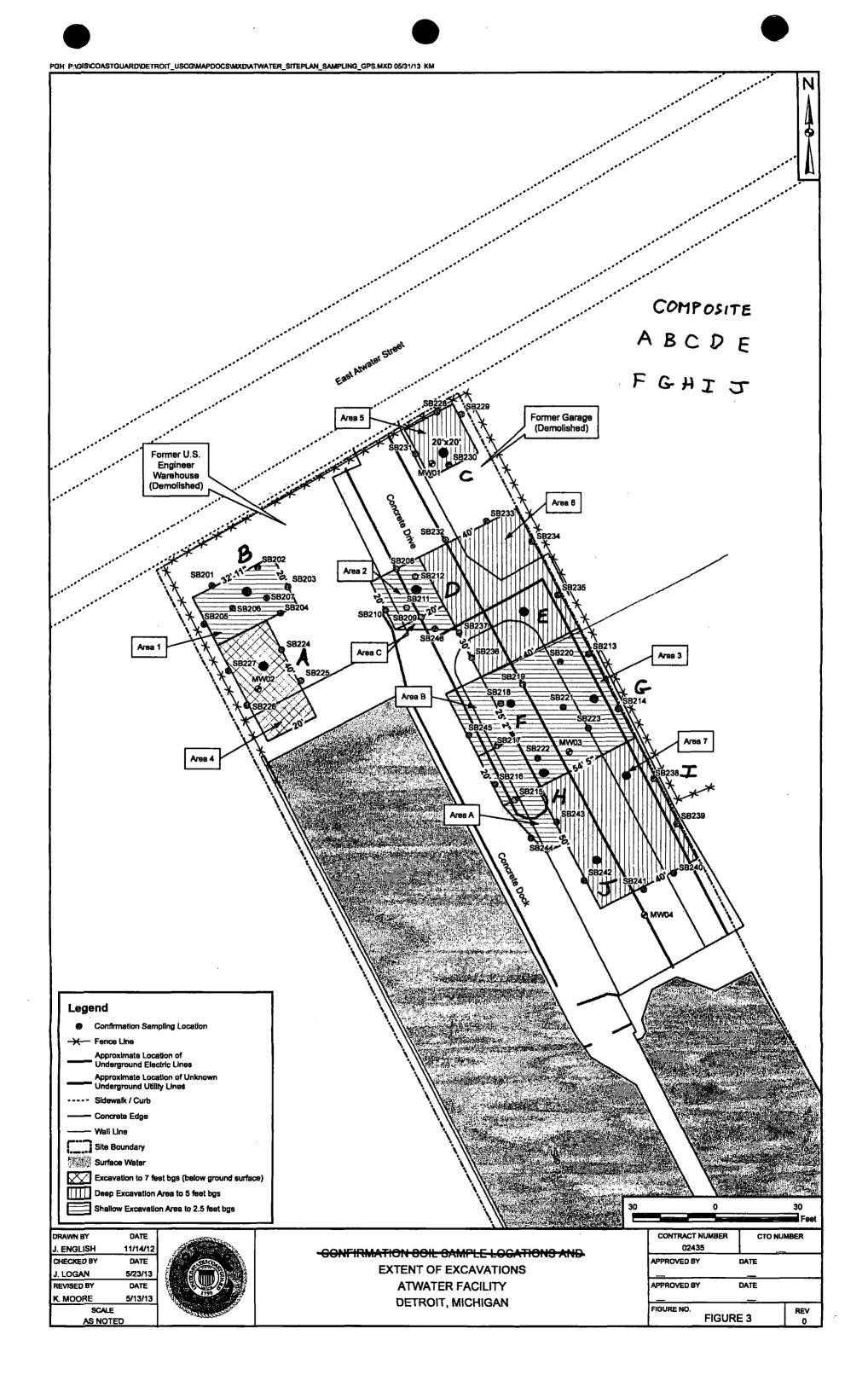
UR - Not detected. Result rejected, poor blank spike recovery.

mg/kg - milligrams per kilogram.

PCBs - Polychlorinated biphenyls

SAMPLE DATE - First four digits are year, next two are month, last two are day.

SAMPLE LOCATION SKETCH



FIELD SAMPLING FORMS

TŁ.	Tetra	Tech	Inc.
(			

Event:

QUARTERLY MONITORINE

Project Site Name:

DETLOIT - ATWATER (D-A)

Project No.: //2602435

Sample ID No.: DA-SBCOI- COOL			Sampled By: TR, MM				
			Sampled By: TR, MM Sample Date: 3-18-14				
QA/QC Duplicate ID:			MS/MSD Co		YES (NO		
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MATRIX/CONCENTRA	TION語 春豆 雪鞋是歌			響 清 轉		<b>新聞歌歌歌歌歌歌歌歌歌歌歌歌</b>	
Surface Soil							
[] Subsurface Soil			[] Low Cor				
[] Sediment				ncentration			
GRAB SAMPLE DATA:							
Time:	1530	Depth Interval	Color	1	Sand, Silt, Clay, Mois		
Method: HAND Core Monitor Reading (ppm):		0-6	Black	FILE SAM	O, TR MID SA	a D	
Monitor Heading (ppin):					•		
MULTIPLE//COMPOSI	E SAMPLE DATA						
Method:		PID Readings (F					
Sample ID	Time	Depth Interval	Color	Description (	Sand, Silt, Clay, Mois	ture, etc.)	
				-			
						-	
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SAMPLE COLLECTION	INFORMATION				国工、江西亚	<b>主点型加速型</b>	
Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected	
vocs		MEON		HU MI	VOA VIA	<u> </u>	
SVOCS PLB METALS		NA		902	JAR		
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OBSERVATIONS / NOT	<b>医医疗遗憾</b> 的第三元 10 10 20	l Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carlo Carl		MAP-NE NEW NEW NEW NEW NEW NEW NEW NEW NEW N			
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Event:

QUARTER / MUNITORING

Project Site Name:

DETROIT - ATWATER (D.A

Project No.:

112602435

Sample ID No.:	DA-50001-12	24	Sampled By	r. TR	, MM			
Sample Location: (D-A)			Sample Date: 3-/8-/4					
QA/QC Duplicate ID:			MS/MSD Co		YES NO			
	and the Allegation State had broken which	AND STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF STATE OF	Alimie anne mo	obstance i bedated our Johnson	of Education Telescope .			
MATRIX CONCENTRA	TION:	<b>建</b> "等的。第二				<b>医</b>		
[] Surface Soil						1		
[x] Subsurface Soil			[] Low Cor	ncentration		Į		
[] Sediment			[] High Co	ncentration		j		
GRAB SAMPLE DATAS								
Time:	1550	Depth Interval	Color	Description	(Sand, Silt, Clay, Mois	ture, etc.)		
Method: Hand Corer -	GRAB		,	~ 1 <u>~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~</u>	I TR Med SA			
Monitor Reading (ppm):		12-24	bician	Jan	- , ,	·· u		
			<u> </u>	<u></u>				
MULTIPLE/COMPOSIT	ESAMPLE DATA				A SA SAN AS	<b>《李郑》的《郑</b> 虚		
Method:		PID Readings (F						
Sample ID	Time	Depth interval	Color	Description	(Sand, Silt, Clay, Mois	ture, etc.)		
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SAMPLECOLLECTION	INFORMATION:							
Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected		
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SUOCS PLB METALS		NA	/_	902	Jp	-		
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COMPOSITE SAM	pic collect	ed from	i					
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Tetra Tec	h Inc.		Event:	_	QUARTERly 1	newitueing	
			Project Site	_	BUARTIALLY MUNITURING DETROIT ATWATER (D-A		
	<b>V.</b>		Project No.	:	11260243	<u></u>	
Sample ID No.: OA	- 58002 - 004	76	Sampled By	y: TX	e, mm		
Sample Location:	D-A		Sample Dat		7-18-14		
QA/QC Duplicate ID:			MS/MSD Co	ollected:	YES (NO)		
	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	n and sent his animal section	to the second second			interior in the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the s	
MATRIX/CONCENTRA	TION:	<b>一种</b>			<b>用题的</b>		
[] Surface Soil			£1   am Car				
M Subsurface Soil				ncentration			
[] Sediment		A TO PERSONAL PROPERTY.		ncentration	Shapera to the shall	State of the second	
GRAB SAMPLE DATA							
Time: /// Method: //ANO Cuce		Depth Interval	Color		Sand, Silt, Clay, Mo		
Monitor Reading (ppm):	<del></del>	0-6	Blazz	FINE TO	medium san	1	
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MULTIPLE / COMPOST	TE SAMPLE DATA				E COMPACTOR		
Method:		PID Readings (F					
Sample ID	Time	Depth Interval	Color	Description (	Sand, Silt, Clay, Me	oisture, etc.)	
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SAMPLE COLLECTION	INFORMATION:	LINE TO SHEEK	和1 建键码	4. 产业增生的	T THE STORY		
Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected	
VOCS		MEOH		40 Ml	JAL	<u> </u>	
SVOLS, PLAS, MITALS		NA		9 02	~ ~ ~ <u>~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ </u>		
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OBSERVATIONS / NOT	FS-200			MAP			
			notes + 1. Comp. To 4. Persons	THE RESIDENCE OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY	A COUNTY OF THE PROPERTY OF THE PARTY.	and an indicate the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of th	
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Tetra Tech Inc.			Event: Project Site Name: Project No.:		BUARTER / MUNITORIA DETROT- ATWATER (D-A 112602435		
	4-58002-12	24	Sampled By	y; 7	R. MM		
Sample Location:	DA		Sample Dat	e:	3-18-14		
QA/QC Duplicate ID:	<del>-</del>	<u> </u>	MS/MSD Co	llected:	YES NO		
MATRIX/CONCENTRA	TION:			<b>表示</b>			
[] Surface Soil						·	
Subsurface Soil		ı	[] Low Cor	ncentration		,	
[] Sediment			[] High Co	ncentration			
GRAB SAMPLE DATA:			<b>李林</b> 自 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				
	630	Depth Interval	Color		(Sand, Silt, Clay, Mois		
Method: HAND C	4-60	12-24	1/2	I TIME TO	nedwa sand	/	
Monitor Reading (ppm):		12-27	Drown	1000 10 1	74 B 70: 1 = 1111 <		
MULTIPLE/COMPOSI	TESAMPLE DATA				野生	的	
Method:		PID Readings (F	Range in ppm)		:		
Sample ID	Time	Depth Interval	Color	Description	(Sand, Silt, Clay, Mois	sture, etc.)	
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SAMPLE COLLECTION	INFORMATION	10世紀			2000年1000年100日	<b>建筑</b>	
Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected	
Vocs		MEOH !	/	40 ml	VOA VIO	-	
SVOCS, PLB, METALS		NA	-	902	JAR	<u> </u>	
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Tologil 3/18/14

WEATHER: Mostly Sunny High 300s TUES 3-18-14 Coult SAMPLE ID Purgs PA-MWOIR-0314 1205 1255 DA-FD 031814 0000 (MW) DA-MWOZR-0314 1200 1250 1250 (MS/MSO) 1415 DA-MW04-0314 1320 1410 TR DID MNA FOR ABOVE SAMPLED FROM DEGC 1400 HRS - WILL TAMMINGA, ARRIVED @ 3, tE to obsERVE soil sampling We hadn't layed out the SAMPling locations yet & WERE Still sampling the wells E RUNNING MNA - HE left the site but said he would RETURN to OBSCIVE SOIL SAMPling lATER (IN About ANDA)

SAMPLE LOCATIONS	SAMPLE ID	Sample Time
A,BC,DEE	PA-58001-0006	1530
A.B.C.DEE	DA-58001-1224	1550
	DA-SB002-0006	1600
F, GH, IEJ	DA-58002-1224	1630
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1500 HRS - LAYED out sample locations

Test 3/18/14

FOR Soil SAMPLING Composites

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TUES 03-18-14 Cont		
~1600 Hrs - W. TAMMINGA RETURNED		
to observe suil sampling		
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E FOOK A FEW PHOTOS		
1730 HRS - FINISH CLEAN UP @ SITE		
É LEANE FOR HOME		
1739 HAS - PURCHASE ICE @		
SHELL STA.		
1726 HRS - DINNER		
1755 HRS - BACK ON Rd. to HOME		٠
2200 Has - ARRIVE @ M. MENGELS Home		
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LABORATORY DATA AND DATA VALIDATION REPORT

LABORATORY DATA AND DATA VALIDATION REPORT (pdf of report is on CD)